# Undergraduate Catalog
# 1988 – 1989

*Fitchburg State College*

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*Fitchburg State College*

*Photography by Bob Arnold*

# *How To Use This Catalog*

This catalog is your comprehensive guide to life at Fitchburg State College, both curricular and extra-curricular. You should read the introductory sections carefully, and discuss any questions you may have with your advisor or the staff of the Advising Center. For answers to specific questions on such matters as tuition, financial aid, grading policy, and non-academic matters, you should visit the appropriate office on campus.

The most important function of this book, however, is in outlining the various requirements you will need to fulfill in order to graduate. You will need to select those courses that satisfy the requirements of both the College's General Education curriculum and those necessitated by your choice of major. We suggest that you consult this catalog prior to selecting each semester's courses, reviewing the requirements for your major and reading the course descriptions before meeting with your advisor.

After the first week of classes in any course, you should make a decision about continuing in it. The catalog outlines the process for both dropping and adding courses, and the effect your decision may have on your grade point average and graduation schedule. We strongly urge you to review those sections pertaining to general and departmental academic requirements as you prepare for your junior and senior years, so that you are certain of your progress.

Remember: read, consider, discuss, decide, and act—that's how to use this catalog best!

# Accredited by:

The New England Association of Schools and Colleges; the National League for Nursing; the Council for Standards in Human Service Education.

# Approved by:

The National Association of State Directors of Teacher Education and Certification; the Interstate Certification Compact in Certification of Educational Personnel; the State Board of Registration in Nursing.

# Member of:

The American Association of Colleges of Teacher Education, the College Entrance Examination Board, The Massachsetts Association of Nursing, the American Association of State Colleges and Universities, the American Association of University Women, the International Association of Colleges and Universities, the American Council on Education, the New England Association of College Admissions Counselors, the American Association of Collegiate Registrars and Admissions Officers, and the Council of Colleges of Arts and Sciences.

# Servicemembers Opportunity College:

Fitchburg State College is a fully-approved S.O.C. member, committed to assisting military students achieve their educational goals. The S.O.C. principles and criteria subscribed to by all member institutions provide the basis for a consistent and uniform approach to meeting the special needs of military personnel. The Associate Registrar of the College serves as the counselor for this important program.

# Affirmative Action Policy:

It is the policy and commitment of Fitchburg State College not to discriminate on the basis of race, religion, color, age, sex, handicap, veteran status, marital status, or national origin in its educational programs, activities, admissions, or employment policies, and to comply with the requirements of Federal Executive Orders 11246 and 11375 as amended; the Civil Rights Act of 1964 as amended; Title IX of the Educational Act of 1972; Sections 503 and 504 of the Rehabilitation Act of 1973; Section 402, Vietnam Era Veterans Readjustment Assistance Act of 1974; and pertinent laws, regulations, and executive directives of the Board of Regents of Higher Education, the Commonwealth of Massachusetts, and other applicable state and federal statutes.

Inquiries concerning the application of, or compliance with, the laws and regulations prohibiting such discrimination should be addressed to John J. Giarusso, Director of Personnel/Affirmative Action, who has been designated Title IX Coordinator (Ext. 3172), or with respect to Section 504, to Steven J. Lanciani, Director of Facilities (Ext. 3118), who has been designated Coordinator for Section 504, or the Office of the Assistant Secretary of Civil Rights, United States Department of Education, Washington, D.C.

# Sexual Harassment Policy:

Fitchburg State College prohibits any member of the College Community, male or female, from harassing another employee or student sexually. The college is committed to providing an environment for working and learning which is free from all forms of abusive, harassing, and coercive conduct, and to protecting the right of all members of the College Community (faculty/librarians, administrators, staff, and students) to be treated with respect and dignity.

Sexual harassment consists of unsolicited verbal, non-verbal, and/or physical conduct which has the effect of interfering with student or employment status, or of creating an intimidating, hostile, or offensive environment. The College's Affirmative Action Grievance Procedures will serve as a system of review and resolution for both formal and informal complaints. Further information or advice may be obtained by contacting John J. Giarusso, Director of Personnel/Affirmative Action (Ext. 3172).

# Privacy and Confidentiality Regulations:

Privacy and Confidentiality Regulations pursuant to the Fair Information Practices Act—F.I.P.A.—(Chapter 766 of the Acts of 1965) are posted (together with a copy of Chapter 766 and the name of the F.I.P.A. administrator) on appropriate bulletin boards at the College. Additionally, a copy of the regulations are kept on file at the Registrar's Office.

Students should note that if any of these regulations should conflict with applicable provisions of the Federal Privacy Act of 1974 as amended, or with any regulations promulgated pursuant to said act, the provisions of said federal act or federal regulations shall control.

# Waiver of Academic Regulations:

Recognizing the inappropriateness of rigidity in endeavoring to promote its goals, the College provides for waiver procedure relative to its baccalaurate rules, regulations, and programs. All petitions of waiver of regulations begin with the Office of Academic Affairs. The student should note that the reasons for waiver must be as exceptional as its grant.

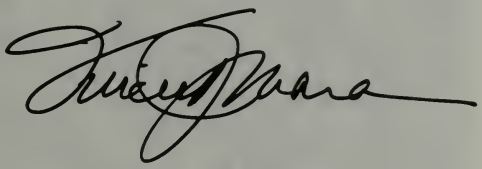
**The provisions of this catalog are not to be regarded as an irrevocable contract between the College and its students.**

# *To The College Community*

*Fitchburg State College was founded in 1894 to prepare teachers for the Commonwealth. Today, you will discover it is a comprehensive public college that gives you the opportunity to pursue those programs of study that interest you at an affordable cost.*

*As a public institution, our history has been one of innovation and growth in career education. You will find us dedicated to maintaining an attractive environment for learning—from state-of-the-art equipment to well-kept grounds and facilities; and you will find an efficient administration dedicated to keeping college costs within your reach.*

*You will, however, come to appreciate these attributes only as a pleasant background to your educational achievement. Ultimately, your attachment to F.S.C. will be forged by our faculty. They bring to their classrooms both broad and specialized knowlege of their fields, and much practical experience. Most importantly, they are a teaching faculty, committed to helping you acquire the knowledge and skills you need for success in your careers.*



*Vincent J. Mara, Ph.D.*
*President*

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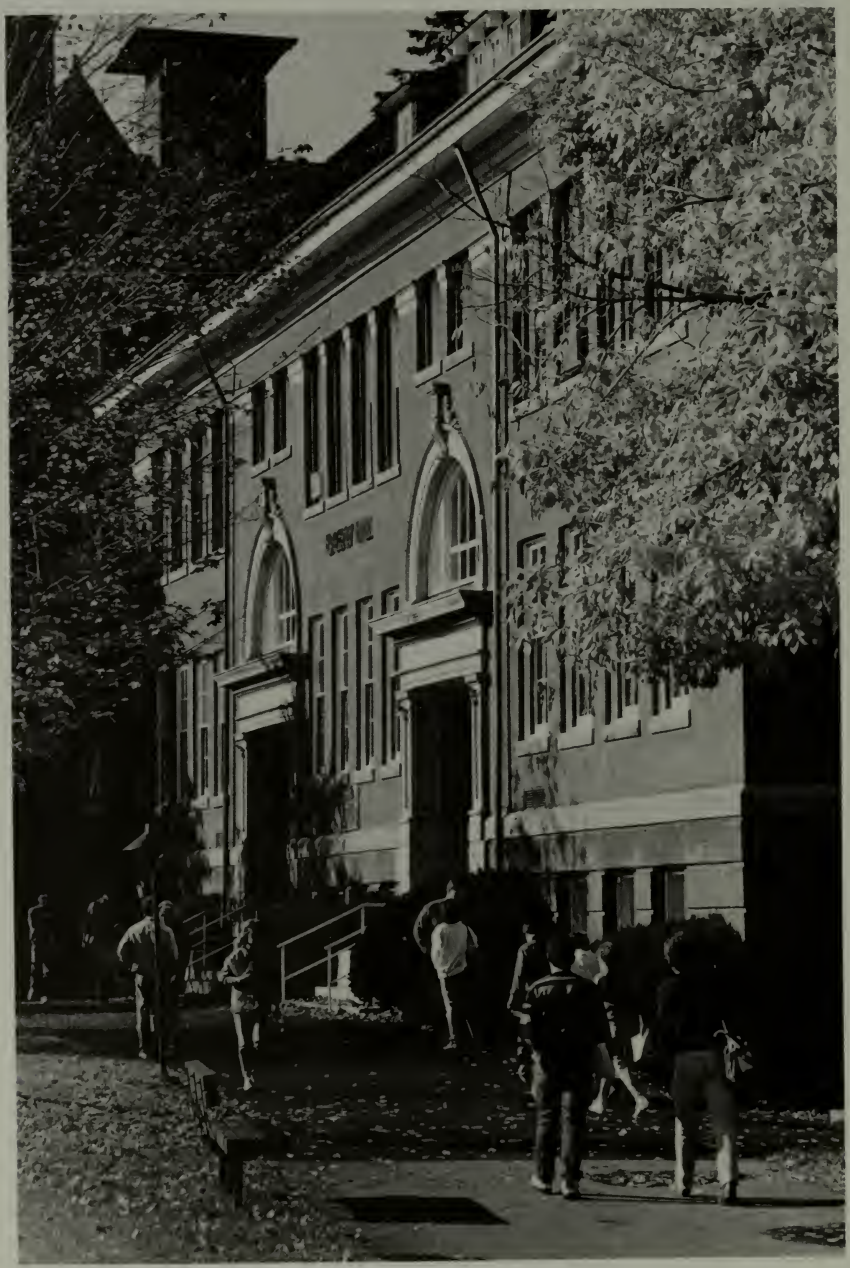
# *The Academic Calendar 1988-1989*

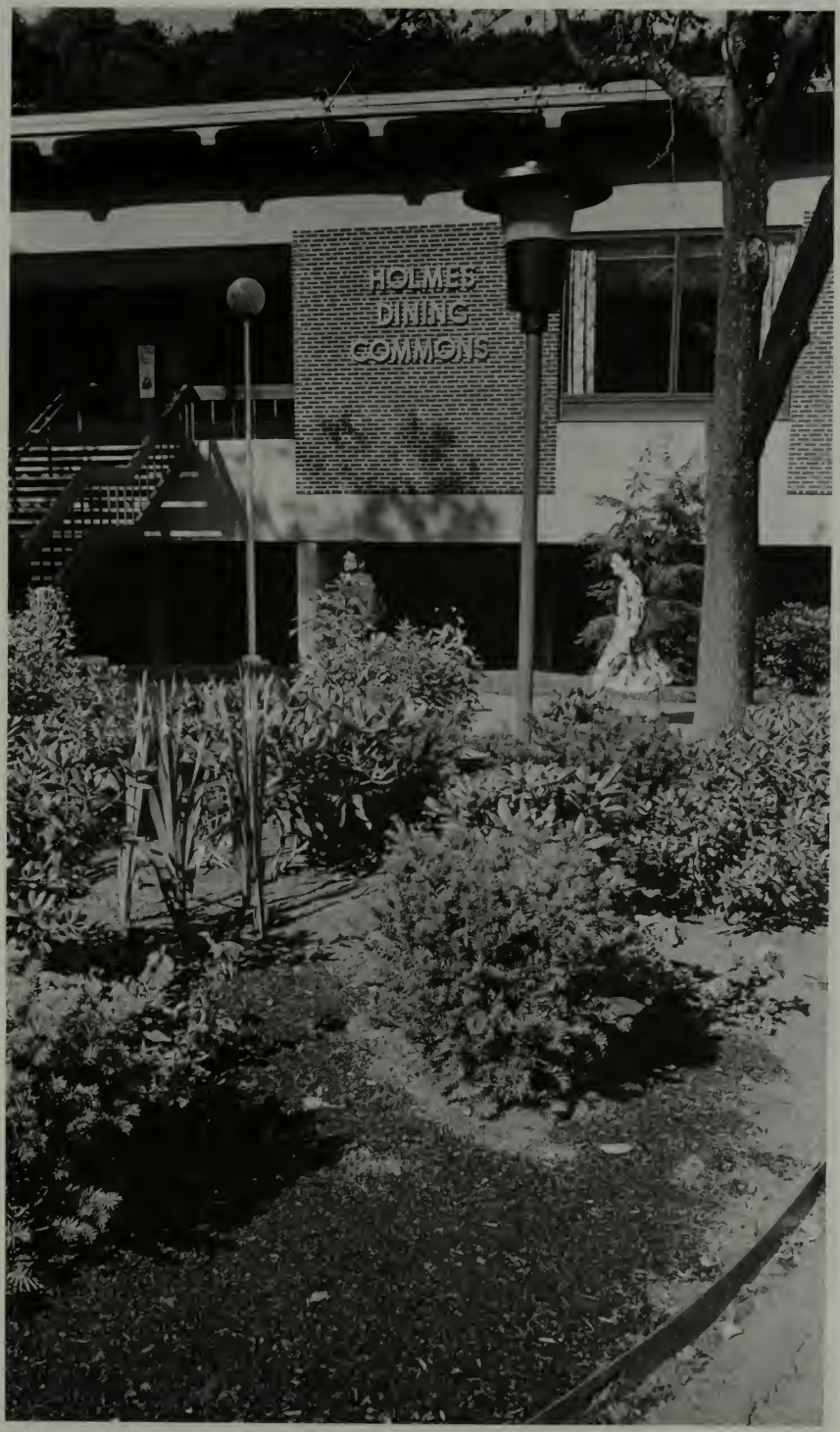


# Fall, 1988

| | | | |
|---|---|---|---|
| Sept. | 5 | Monday | Residence halls open for all students—12 noon |
| | 6 | Tuesday | President's address to the faculty—10 a.m., followed by department meetings and student advising |
| | 7 | Wednesday | Classes begin—8:30 a.m. |
| | 20 | Tuesday | Final Day for adding/dropping courses |
| | 22 | Thursday | Fall Academic Convocation—1:30-2:30 p.m. |
| Oct. | 4 | Tuesday | Final day for making up Incomplete grades from the previous semester |
| | 6 | Thursday | U.S. and Massachusetts Constitution Examination |
| | 10 | Monday | Columbus Day—NO CLASSES |
| Nov. | 2 | Wednesday | Final day for withdrawal from classes without penalty |
| | 11 | Friday | Veteran's Day—NO CLASSES |
| | 17 | Thursday | U.S. and Massachusetts Constitution Examination |
| | 23 | Wednesday | Thanksgiving recess begins—3:00 p.m.; residence halls close—5:00 p.m. |
| | 27 | Sunday | Thanksgiving recess ends; residence halls reopen—3:00 p.m. |
| Dec. | 9 | Friday | Last day of Fall Semester classes |
| | 12-23 | | Final examinations |

# Spring, 1989

| | | | |
|---|---|---|---|
| Jan. | 16 | Monday | Martin Luther King Day—NO CLASSES<br>College opens; residence halls open for all students—3:00 p.m. |
| | 17 | Tuesday | Departmental meetings and student advising |
| | 18 | Wednesday | Classes begin—8:30 a.m. |
| | 31 | Tuesday | Last day for adding/dropping classes |
| Feb. | 14 | Tuesday | Final day for making up Incomplete grades from the previous semester |
| | 16 | Thursday | U.S. and Massachusetts Constitution Examination |
| | 20 | Monday | U.S. President's Day—NO CLASSES |
| Mar. | 10 | Friday | Spring vacation begins—4:30 p.m.; residence halls close—6:00 p.m. |
| | 19 | Sunday | Spring vacation ends;<br>residence halls reopen—6:00 p.m. |
| | 22 | Wednesday | Final day for withdrawal from classes without penalty |
| Apr. | 17 | Monday | Patriots' Day—NO CLASSES |
| | 18 | Tuesday | All-College Development Day (Tentative) |
| | 27 | Thursday | Honors Convocation; afternoon classes suspended—1:30 p.m. |
| May | 5 | Friday | Last day of Spring Semester classes |
| | 8-17 | | Final Semester Examinations |
| | 28 | Sunday | Commencement, Campus Quadrangle—10:30 a.m. |


HOLMES
DINING
COMMONS

# *The College*

At Fitchburg State College, our academic programs combine a traditional foundation in the liberal arts with professional majors in order to develop the whole person. Our students are challenged throughout their collegiate careers to discover themselves intellectually, physically, socially, and spiritually. "The Fitchburg Commitment" means learning to love life, and to contribute to it in a useful, memorable fashion. We can think of no greater goal.

Fitchburg State College is the largest four-year college in central Massachusetts. Its intimate, attractive campus, enthusiastic students, and tradition of opportunity and excellence are known throughout the Commonwealth. Each year, businesses and other organizations familiar with the quality of a Fitchburg State College education seek out our students as interns and our graduates as employees. This link between the College and the community makes Fitchburg State important to the region, but ultimately, what makes our College so special is the character of its people.

# History of the College

Established in 1894 by an act of the Massachusetts Legislature, the State Normal School in Fitchburg opened in temporary quarters in the old high school building on Academy Street. There, Principal John G. Thompson, aided by a teaching staff of three, and having a library of some two hundred volumes and an operating budget of $11,500, implemented a two-year teacher training program that had an enrollment of forty-six women. In December, 1896, the school moved into its new building, and took charge of the Day Street and Highland Avenue city buildings, which became State Schools of Observation and Practice.

Several years later, the Edgerly School opened as an eighth grade model and practice school, and in 1910, it became one of the first junior high schools in the United States. The following year, a practical arts teacher training course for men, the first of its kind in the country, was instituted, and male enrollment increased dramatically.

In 1930, the State Normal School was authorized to offer a bachelor's degree in practical arts, and in 1931, when it became the State Teachers College at Fitchburg, four-year degrees were offered in all levels of education. Formal graduate courses were added in 1937.

In 1960, the College became the State College at Fitchburg, and was empowered to award degrees in disciplines other than education. In 1965, its name was officially changed to Fitchburg State College, which today offers thirty-two undergraduate degree programs in nineteen academic departments to its 3,700 full-time and 2,700 part-time students. Its campus, which has expanded from a single structure on High Street to twenty-three buildings on fifty-four acres, has become the educational center for the Montachusett area, offering not only undergraduate programs for the traditional student but also degree programs for the adult learner through its Graduate and Continuing Education Division.

# Principles of the College

Fitchburg State College seeks to fulfill its mission of public service by striving for excellence in four specific ways:

## *Dedication to Career Education*

The College aims to assist students in identifying their goals, and in deciding upon their careers—

- by providing progams preparing students to meet the needs of society through traditional careers;
- by developing programs dedicated to new and emerging career fields;
- by offering students the opportunity to gain field experience which aids in securing employment; and
- by making available additional training programs to supplement the knowledge and skills of persons already holding jobs.

## *Dedication to Student Development*

The College aims to create an environment on campus which will foster the intellectual, aesthetic, and moral development of the student body—

- by developing a spirit of commitment to learning—in stressing high standards of intellectual performance, in encouraging scholarly research, in developing the students' ability to analyze and synthesize knowledge from a variety of sources, and in communicating the conviction that learning is a life-long process;
- by enabling students to acquire knowledge in the Humanities, the Social Sciences, and the Physical Sciences, as well as a comprehensive grounding in at least one academic discipline and/or interdisciplinary course of study;
- by encouraging the moral development of every student, a process which requires reflection and a commitment to ethical principles as a guide for personal conduct, as a basis for self-esteem, and as an aid to learning respect for all peoples;
- by helping students recognize the great moral issues of our times, and by assisting them in seeking improvement in the quality of life by examining and taking action on the environmental and social problems which beset us as a nation; and
- by establishing those conditions which are conducive to an aesthetic environment by involving all members of the College community in the determination and promotion of cultural activities.

## *Dedication to the Montachusett Community*

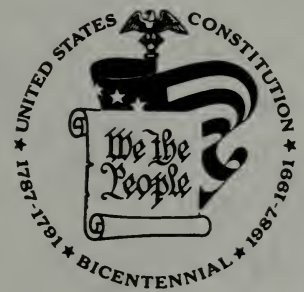
The College aims to maintain its proud tradition as the cultural and intellectual center of the region—

- by providing for continuing adult education;
- by facilitating student involvement in neighborhood and community service activities;
- by making the most efficient use of the human, natural, and material resources provided by area communities; and
- by cooperating with the efforts of local, regional, state, and federal authorities to solve those social, economic, and governmental problems which lie within its sphere of influence.

## *Dedication to the College Community*

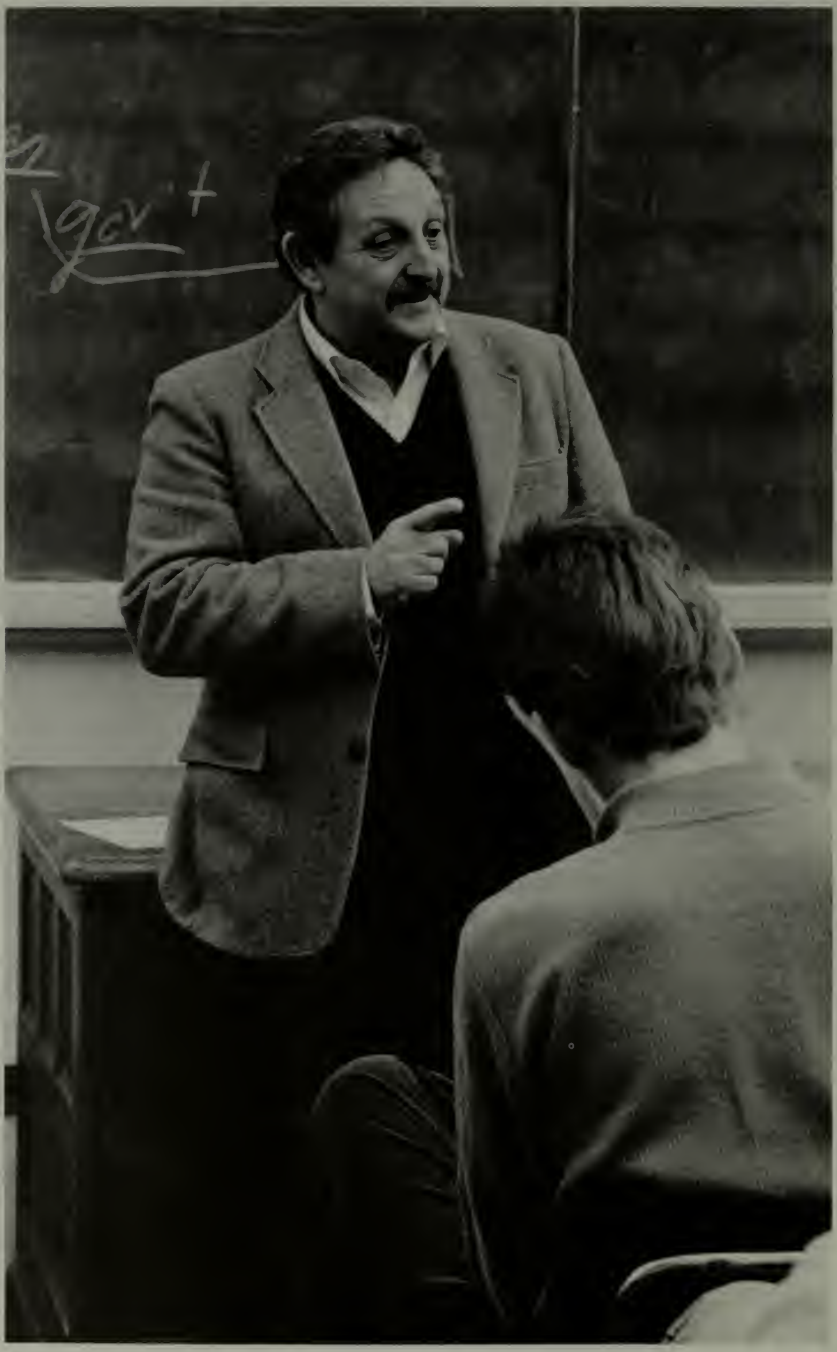
The College aims to promote the welfare of its entire community—

- by evaluating in a systematic fashion the programs, practices, policies, and personnel of the College, as well as regularly assessing its needs as outlined in short-, medium-, and long-range planning;
- by recognizing and respecting the rights of all members of the College community;
- by establishing and maintaining open channels of communication throughout the structure of the College;
- by maintaining a clearly defined system of governance which calls for participation by representatives of students, faculty, and administrators; and
- by encouraging individuals in their search for truths, and in the honest consideration of ideas, both in the classroom and in communications with all members of the College community.




Fitchburg State College
A Bicentennial
Campus

# *The Curriculum*



At Fitchburg State College, each curriculum, or course of study, has been conceived as a guide to help students develop the intellectual skills needed to analyze, interpret, and absorb the accumulated knowledge of the past. The purpose of every curriculum is to assist students in recognizing the possibilities as well as the problems of their changing world, to instill within them a moral awareness of their responsibilities toward improving the quality of human life, and to prepare them for careers which will enrich their lives as they enrich the lives of others.

Each curriculum includes a set of general education courses and courses in a major field of study. The purpose of the general education requirements is to develop within Fitchburg State students the sense of aesthetics, the skills for both quantitative and moral reasoning, and the enhanced verbal abilities that only come through study in a variety of academic disciplines. Through study in their major field, students reap the benefits of both the theoretical and the practical aspects of their subject: in addition to classroom and laboratory work, many major programs at Fitchburg State College include a senior year internship or practicum.

# To the Incoming Student— The Proficiency Program and How It Affects You

All students, including transfers, will be tested or otherwise evaluated upon entrance to Fitchburg State College to determine their proficiencies in writing and mathematics. If their skills are found deficient by departmental standards, students will be required to participate in a remediation program designed to improve basic academic abilities, thus ensuring a more succesful collegiate career for each participant.

Freshmen with less than twelve transfer credits will be required to complete EN 010—Basic College Writing if their writing skills are determined to be unsatisfactory and if they have no transfer credit in English Composition, and MA 010—Basic Mathematics I and/or MA 020—Basic Mathematics II depending upon their level of proficiency in mathematics.

Transfer students whose writing skills are determined to be unsatisfactory will be required to take Basic College Writing if they have no transfer credit in English Composition. If they do have such credit, they will be required to register for the Writing Skills Workshop (please see page 000), either before registering for EN 120—English Composition II, or, if they've already completed an equivalent course at another institution, as a condition of graduation. Transfer students who fail the mathematics examination will not be required to take Basic Mathematics I or Basic Mathematics II unless they wish to enroll in a mathematics course at the 100-level or above; however, they will not be allowed to register for such a course until their deficiencies are remediated.

These courses—EN 010, MA 010, and MA 020—carry Institutional Credit only; that is, **they will not count toward graduation,** but will count toward full-time status for purposes of financial aid and athletic eligibility. Additionally, the grades received in these courses will be counted in each participant's grade point average.

# To the Maticulating Student— Common Graduation Requirements and How To Meet Them

In order to be eligible to graduate with a baccalaureate from Fitchburg State College, the following requirements must be met:

1. All candidates for graduation must successfully complete a program entailing not less than 120 semester hours of course work with a cumulative average of not less than 2.0; additionally, candidates must possess a 2.0 average in their respective majors.

2. Of these 120 semester hours, 45 must be attained in residence; normally, these will include the senior year.

3. All candidates planning to earn teacher certification must satisfy the Constitution requirement of the Commonwealth of Massachusetts. This requirement calls for knowledge of the Federal Constitution and that of the Commonwealth. Candidates may fulfill it in either of two ways:

   a. by passing a written examination on the two constitutions, which is offered by the Social Science Department at least three times annually, and which may be taken as often as is necessary (a pamphlet on the exam and a study guide may be obtained from the College Bookstore); or

   b. by successfully completing one of the following courses—
   HI 210 - United States History I,

   HI 220 - Unites States History II,

   PS 100 - Modern American Government: State and Urban Government,

   PS 200 - Modern American Governement: The Federal Government,

   PS 220 - Constitutional Law and the Supreme Court.

4. Of the 120 semester hours needed to graduate, candidates must spend a minimum of 60 hours satisfying General Education requirements, which, in addition to the Remediation requirement (if necessary) and the Constitution requirement (for teacher education majors only), include the following components:

   **English Composition**—two courses, EN 100 and EN 120, or their equivalent, taken at another institution;

   **Health and Fitness**—one course, PE 100, or three credit hours of Physical Education courses (for course options, please refer to page 000);

   **Speech**—one course, if required by the candidate's major (SH 100, SH 110, SH 120, SH 130, or SH 140 fulfills this requirement for most majors; SH 160 satisfies it for communications/media majors);

   **Math/Science**—four courses, chosen from the following disciplines: biology, chemistry, computer science, geology, mathematics, and physics, with not more than two courses taken in any one area **(N.B.: four courses, regardless of whether they carry three or four hours credit must be completed)**;

**Social Science**—five courses, chosen from the following disciplines: economics, geography, history, political science, psychology, and sociology, with no more than two courses taken in any one area.

**Humanities**—five courses, chosen from the following disciplines: art, foreign languages (French, German, Russian, and Spanish), literature, music, philosophy, and speech, with no more than two courses taken in any one area; and

**General Education Electives**—two liberal arts courses (three, if speech is not required in the candidate's major) which may be chosen from any discipline except the following: business administration, communications/media, education, human services, industrial technology, medical technology, military science, and nursing.

5. Candidates should be aware that the following restrictions apply with respect to fulfilling their General Education requirements:

   - No division of credits earned in one course is allowed.
   - Credits earned toward graduation cannot be counted twice, even though courses which satisfy General Education requirements may also fulfill the requirements of one's major course of study.
   - Certain majors specify which courses must be taken to satisfy the candidate's General Education requirements—be sure to read the section pertaining to your major carefully before registering for classes.

6. Candidates are required to enroll in a major course of study, which will vary between thirty-three and sixty-three semester hours in length. Enrollment in a given major is a formal process. Most students are accepted into a major program upon admission to the College. Other students apply for acceptance after their matriculation. These students must file an application with the Registrar. While some students remain as Undeclared Students through their sophomore year, the Registrar's Office encourages all enrollees to apply for transfer to the major of their choice as early as possible in their college careers. Application forms for most majors are available in the Academic Advising Center or from the chair of the individual department.

Students may change their major or degree program during their matriculation; however, they must be able to meet the requirements for their new major. Some programs (e.g., business) cannot accept all the applicants who wish to transfer to that field. Therefore, students should consider more than one choice when either declaring or changing their field of study. Please note that changing one's major quite often increases the amount of time required to complete the baccaluareate program.

Programs having requirements for internal transfer are business administration, communications/media, economics, human services, nursing, and special education. Students capable of meeting such requirements may proceed with the application process as described above.

7. Candidates who are still short of the 120 credits required for graduation after fulfilling both their General Education requirements and those necessitated their major may choose from three options in completing their baccalaureate studies: a double major, an academic minor, or free electives.

   **Double Major**—Degree candidates may earn a baccalaureate with two majors at Fitchburg State College by satisfying the degree requirements of both programs. Since only one degree is granted, both programs must result in the same type of degree: B.A., B.S., or B.S. Ed. Students considering this option should be aware that such a course of study will probably require more than 120 semester hours to complete.

   Enrollment procedure for the second major is the same as for the first.

**Academic Minor**—Degree candidates at Fitchburg State are encouraged to pursue other academic interests in addition to their major; since all areas of knowledge lie adjacent at some point, the exploration of a field other than one's own tends to expand personal horizons. The academic minor is an ideal way to structure such a pursuit.

Minors are offered in art, biology, business administration, chemistry, computer science, economics, English, elementary education, French, geography, German, history, industrial science, interdisciplinary graphics, Irish studies, mathematics, music, philosophy, physical education, psychology, Russian studies, secondary education, sociology, Spanish, and theater. Although the minimum number of credits required for the completion of a minor is fifteen, the amounts vary significantly from discipline to discipline as do the kinds of prerequisites needed. Interested candidates should refer to the "Courses and Programs" section of the catalog for further information, or to the brochure on Academic Minors, copies of which are available in the Registrar's Office or in the Academic Advising Center.

As with the academic major, enrollment in the minor is a formal process; application to the appropriate department is required, along with a declaration of commitment, which must be filed with the Registrar. Please note that some minors have limited enrollments.

**Free Electives**—Degree candidates may choose to complete their baccalaureate studies with a series of courses related, not by traditioanl discipline, but rather by virtue of the student's interest in them. Free electives may be selected from any field, provided the candidate has met the course prerequisites, and enrollment is not limited.

Fitchburg State College is empowered by the Board of Regents of Massachusetts Public Higher Education to offer the following degrees:

## *Bachelor of Arts*

The Bachelor of Arts is offered to students majoring in biology, chemistry, English, geography, history, mathematics, psychology, and sociology.

## *Bachelor of Science*

The Bachelor of Science is offered to students majoring in biology, business administration, chemistry, communications/media, computer science, economics, geography, history, human services, industrial sciences, mathematics, medical technology, nursing, psychology, and sociology.

## *Bachelor of Science in Education*

The Bachelor of Science in Education is offered to students majoring in biology, early childhood education, elementary education, English, geography, history, industrial arts, mathematics, and special education.

# To New and Returning Students— Program Alternatives and How To Use Them To Meet Your Goals

Fitchburg State College students may take advantage of a number of options designed to help degree candidates tailor their course of studies to best suit their individual wants and needs.

## *CAPS: College Academic Program Sharing-*

CAPS allows students the opportunity to enroll in up to thirty semester hours of courses at another state college without going through formal registration procedures, thus giving them a chance to enjoy a more varied educational experience.

To take part in this program, the degree candidates must have attained sophomore status, have spent at least one semester in residence at F.S.C., and be in good academic standing. Interested candidates should initiate the enrollment process prior to semester registration by soliciting the approval of the chair of the department in which the student is pursuing a major (undeclared majors should contact the Registrar's Office to determine whether further restrictions apply in their case), and having received it, should file a CAPS request with the Registrar's office.

## *CLEP, DANTES, Departmental Examinations, and Advanced Placement-*

The goal of the Fitchburg State College Examination Program is to provide students with the opportunity to demonstrate, by performance on an examination, their knowledge of the material taught in college courses, and, as a result, receive academic credit. This program is useful for the traditional college student, but it is especially valuable for individuals who have had learning experiences outside the college classroom (employment experience, life experience, independent study, etc.) which may come to bear upon their formal academic training. Fitchburg State College will award up to 60 college credits through the examination program, and for individuals scoring three, four, or five on the Advanced Placement Examination, the College will grant advanced placement status and credit in the area tested. For further information on the Fitchburg State College Examination Program, please contact the Academic Advising Center (Thompson Hall, Room 115, Ext. 3321).

## *Division of Graduate and Continuing Education Programs-*

Fitchburg State's Division of Graduate and Continuing Education schedules a wide variety of both undergraduate and graduate level courses during both day (Intersession and Summer Sessions only) and evening hours. They offer three baccalaureate programs **(B.S. in Business Administration, B.S. in Computer Science, and B.S. Ed. in Vocational Education)**, as well as the following certificate programs:

For undergraduate and graduate students—

**Certificate in Business**

**Certificate in Computer Hardware**

**Certificate in Computer Language**
(BASIC, COBOL, FORTRAN, and PASCAL are available)

**Certificate in Plastic Technology**

For graduate students only—

**Certificate in Advanced Graduate Study/Career Education**

**Certificate in Computer-Aided Manufacture**

**Fine Arts Director Certificate**

**Certificate in On-Site Construction Management**

In addition, the Division of Graduate and Continuing Education offers programs leading to the following masters degrees—

**Master of Arts in Teaching (English)**

**Master of Education**

M.Ed. in Arts in Education

M.Ed. in Educational Leadership and Management

M.Ed. in Educational Technology

M.Ed. in Elementary Education

M.Ed. in Occupational Education

M.Ed. in Science Education

M.Ed. in Special Education

Generic Consulting Teacher

Teacher of Children with Moderate Special Needs

Teacher of Children with Severe Special Needs

Teacher of Young Children (3-7 years) with Special Needs

**Master of Science**

M.S. in Communications/Media Management

M.S. in Computer Science

M.S. in Counseling (both School and Community specializations)

M.S. in Management

Senior level students (those who have completed 90 or more semester hours) who have a grade point average of 3.5 or better are eligible to register for graduate credit courses at the 900 level. Interested students should obtain recommendations from their undergraduate advisor and the Registrar, and submit these to the Dean of Graduate and Continuing Education for consideration. If approved, students may register for a maximum of three graduate credits per semester, with the provision that their combined graduate and undergraduate course load does not exceed fifteen semester hours. Seniors may complete up to nine hours of gradaute work during their undergraduate matriculation.

Please note that graduate credits may be applied by students to maintain their full-time status in order to receive financial aid.

For further information regarding admission and registration for these and other programs in the Division of Graduate and Continuing Education, please contact the Office of the Graduate Dean at (508) 345-2151, Ext. 3182.

## *Double Degree Matriculation-*

Students wishing to earn two bachelor degrees at Fitchburg State College may do so by satisfying the degree requirements for both prior to receiving the second degree. They must earn 30 semester hours credit beyond the 120 hours required for the first degree, and spend an additional two semesters at the College.

## *Honors Program-*

The Honors Program is a coordinated four-year program offering an enriched curriculum for the most academically-able F.S.C. students. Freshmen are invited to join the Honors Program based on their high school grades and preparation, SAT scores, and the recommendations of their secondary teachers. Sophomores and juniors are invited to join provided they have a cumulative average of at least 3.2. For further information, see "The Honors Program" in the "Courses and Programs" section of the catalog.

## *Independent Study-*

Students wishing to engage in the specialized study of a specific academic area beyond the scheduled course offerings of a given semester may do so if proper supervision by a faculty member can be arranged. Interested students may initiate this option by requesting the guidance of a professor in whose specialization they wish to study. The decision to authorize independent study and the amount of credit pertaining thereto belongs to the professor and the department involved, with final approval being given to all projects by the Undergraduate Dean. Usually, only three credits of independent study may be attempted in one semester; if, however, a student wants to attempt more than this, permission must be received from the Undergraduate Dean.

## *Student Teaching and Certification*

In order to participate in a teacher education program, students must meet the following criteria:

- they must have received the recommendation of the majority of faculty members in their major or area of specialization;
- they must have demonstrated effectiveness in both oral and written communication skills;
- they must have successfully completed the tuberculin screening test.

The Teacher Education council requires that each candidate for student teaching possess a 2.0 cumulative average and a 2.5 average in his or her major field of study, as each academic department defines "major field." No incomplete in any course is allowed, nor is probationary status acceptable. Furthermore, no unresolved failure in a candidate's major, nor any course overload during the student teaching period is permitted.

An incomplete or failure in student teaching necessitates the repetition of the course. Each student must furnish his or her own transportation to teaching assignments.

All transfer students are required to take twelve semester hours from at least three different professors within their respective departments prior to student teaching. A student convicted of a felony as defined by the courts of any state is automatically ineligible for a teacher education program. Appeals on either of these points should be directed to the Secretary of the Teacher Education Committee.

All senior education majors are responsible for checking both graduation and certification requirements at the beginning of the senior year. Certification procedures will be discussed at scheduled meetings early in the semester.

# *Undergraduate Admissions*

Fitchburg State College welcomes applications from all individuals seeking a quality college education: whether you're the traditional college applicant fresh out of high school, or one of that fast-growing group, the non-traditional student, returning to college after a hiatus of several years; whether Fitchburg State is the first college you've ever applied to, or you're seeking to transfer from a community college, a junior college, or another four-year institution; whether you're from Bolton, Boston, Bangor, or Bangkok—we invite your interest in our school. Fitchburg State endeavors to offer admission to those students whose secondary school and/or college records and backgrounds offer the promise of a successful and satisfying undergraduate experience. Each applicant is considered individually, and the decisions of the Committee on Undergraduate Admissions are based on many factors.

# General Policy

Fitchburg State College adheres to the minimum admissions requirements as specified by the Board of Regents Admissions Standards Policy. Meeting these requirements, however, does not guarantee admission. Taken into consideration are: school records; rank in class; scores on the Scholastic Aptitude Tests (SAT); letters of recommendation from the applicant's secondary school principal, guidance counselor, and/or instructors; and extracurricular activities. Particular emphasis is placed upon the applicant's school record and class rank. However, the College uses an eligibility index for admissions based upon both high school grades and SAT scores to determine an applicant's admissibility. A low SAT score, for instance, may be offset by a high class rank. (Fitchburg State College supports the efforts of secondary school officials and governing bodies to have their schools achieve regionally-accredited status, to provide reliable assurance of the quality of the educational preparation of its applicants for admission.)

Undergraduate applications are accepted beginning in October. All applications and supporting credentials should be received by March 1st for freshman candidates, and April 1st for transfer candidates for fall admission. Applications and credentials should be received by December 1st for admission to the spring semester.

# Campus Visits

The Undergraduate Admissions Staff believes that all applicants should visit the Fitchburg State College campus, and is, therefore, pleased to offer a variety of visitation programs. Daily student-guided tours are conducted Monday through Friday at 11:30 a.m. and 2:30 p.m. Our "Fridays at Fitchburg" program, which provides the applicant with a comprehensive view of the College (a multi-media presentation, campus tour, inexpensive lunch, and the opportunity to sit in on the class of your choice are included in the day's agenda), will be held on October 21st, November 4th, November 18th, and December 9th in 1988. Our Saturday Information Sessions, an alternative program for those who cannot attend "Fridays at Fitchburg," will be held on October 29th, November 19th, and December 10, 1988. Transfer Information Day, which focuses on the particular concerns of transfer students (e.g., credit transfer, graduation requirements, financial aid) will be held on March 23rd, 1989. Access Day, which is designed to assist disadvantaged students in gaining admission to collegiate life at F.S.C., will be held on March 24, 1989.

Information concerning any of these visitation programs can be obtained by writing or calling the Undergraduate Admissions Office:

Undergraduate Admissions Office
Fitchburg State College
160 Pearl Street
Fitchburg, Massachusetts 01420-2697
Telephone: (508) 345-2151, Ext. 3144, 3145

# Applications—New Students

To be considered for admission to the College, applicants must submit the following to the Office of Admissions:

1. An Application for Admissions to Fitchburg State College. Applications may be obtained at high schools or community colleges throughout the Commonwealth of Massachusetts, or by writing directly to the Admissions Office at Fitchburg State College.

2. Completion of the following high school unit requirements: English - 4; Mathematics - 3; Foreign Language - 2; Social Studies (one must be U.S. History) - 2; Natural Sciences - 2; 3 additional units in any liberal arts or physical education.

3. A transcript of the complete high school record through the first marking period of the senior year. (All students must be graduated from high school or offer equivalent preparation before entrance to the College.)

4. College Entrance Examination Scholastic Aptitude Test (SAT) scores, and the Student Descriptive Questionnaire (SDQ). Although not required, the college welcomes the results of the College Entrance Board Achievement Tests. Many candidates present Achievement Tests in English, and applicants who expect to continue in a foreign language in College should take an Achievement Test in that language. Other Achievement Tests may be taken in the student's major field(s) of interest. Please note that the forwarding of test scores directly to the College from the Educational Testing Service in Princeton, New Jersey is the applicant's responsibility. The College's code number is R 3518.

5. A recommendation for the applicant from his or her high school principal, guidance counselor, or teacher, showing evidence of academic interest, ability, and preparation.

6. A resume of activities if time has lapsed between high shcool graduation and the application process to Fitchburg State College.

Interviews are not required, but can provide the Admissions Committee with helpful information. The College encourages disabled students to discuss their situation with an Admissions Counselor and with the Vice President of Student Affairs to learn what accommodations may be provided by the College. Applicants who desire to have an interview or to visit the campus are invited to call the Admissions Office for an appointment.

Fitchburg State College employs a "rolling admissions" policy. Rather than notify all applicants simultaneously, we do so on a continuing basis over a period of several months, beginning in the early part of January for September applicants.

# Applications—Transfer Students

To be considered for admission to the College, transfer students must meet the following criteria:

1. They must have earned twelve or more semester units (eighteen quarter units) of college credit by their planned entrance date; students with less than twelve semester credits are considered "new" students, and will be required to register at a later date with the freshmen.

2. They must have a grade point average of 2.0 or better; having such an average, however, does not guarantee admission to the applicant's choice of major, as some programs are more selective than others.

Additionally, the following credentials must be submitted:

1. An Application for Admission to Fitchburg State College, which may be obtained by writing directly to the Admissions Office at Fitchburg State College.
2. A transcript or transcripts of all previous college work, including a statement of honorable dismissal from the last college attended.
3. A catalog from each of the previous colleges attended, with the courses the applicant has taken clearly marked.
4. A resume of activities if time has lapsed between high school graduation, further schooling, and the application process to Fitchburg State College.

Transfer credit evaluation is made only after an application has been submitted, and admissibility has been determined. Transfer credits will normally be granted for work completed in other accredited colleges and/or universities, for which the student received a passing grade. Full credit will be given on transferred courses which correspond with those offered at Fitchburg State. Courses which do not fit the degree program may be counted as fulfilling the free elective requirements of the four-year curriculum. A preliminary credit evaluation will be sent with the applicant's letter of acceptance. Inquiries regarding the length of time required to complete a degree program should be addressed to the Admissions Office.

Students who have completed the General Education requirements at one State College prior to transferring to Fitchburg State will not be obligated to meet additional or different General Education requirements. Transfer students exempted from a three semester-hour Composition requirement in any accredited college or university may be exempt from EN 100. No credit accompanies this exemption. Students exempted from six semester-hour Composition requirement will be exempt from both EN 100 and EN120. No credit accompanies this exemption.

All transfer students will be subject to the provisions of Fitchburg State College's remediation policy; for further information, please refer to page 000.

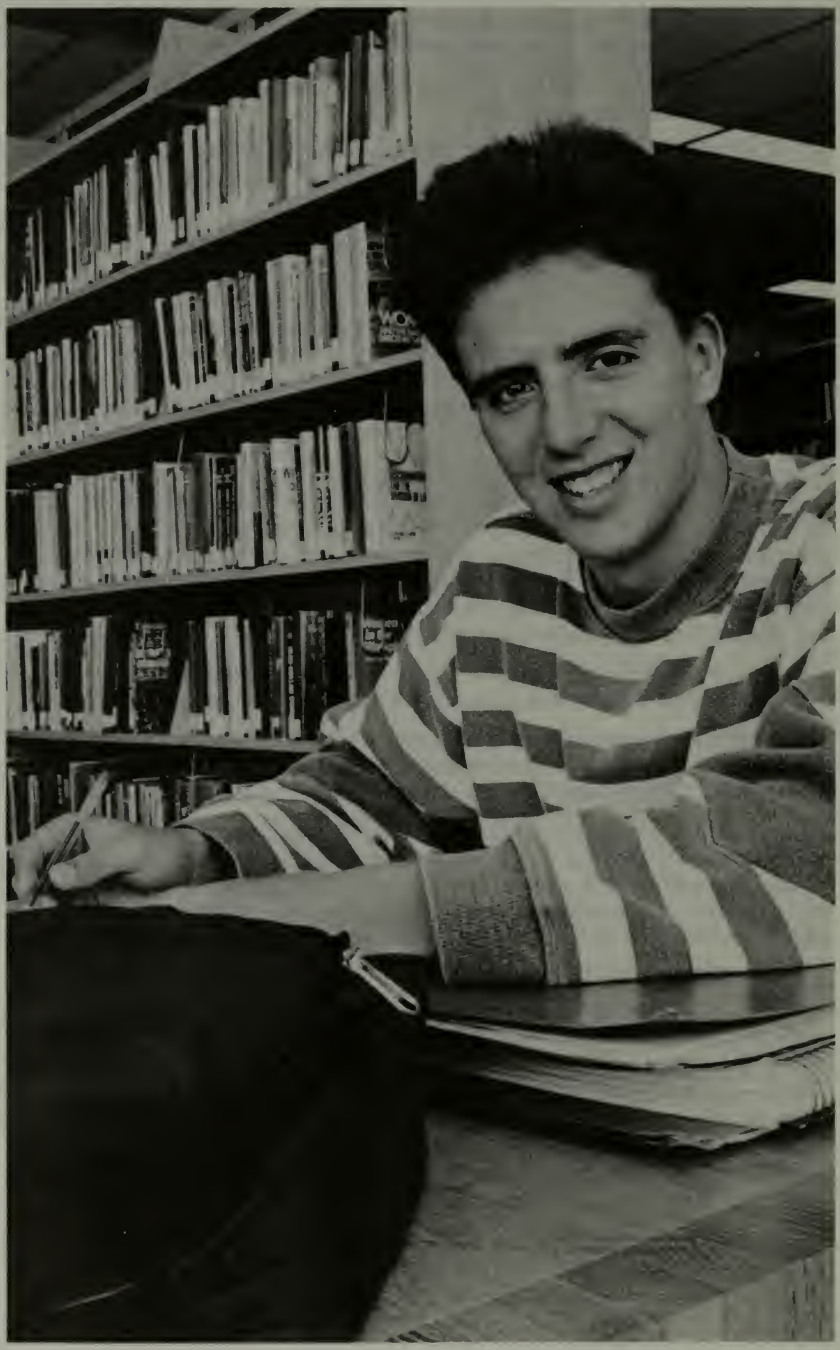
The grade point average from previously attended colleges and universities is dropped, and a new G.P.A. is established, reflecting the student's performance while matriculating at Fitchburg State.

Students transferring from two-year institutions will be entitled to a maximum of two years credit (60-64 semester hours); students transferring from baccalaureate level institutions may be entitled to more, but they may not transfer more than fifty per cent of the total credit hours required in their major, and they must complete a minimum of forty-five credit hours in residence in order to receive a degree from Fitchburg State College.

# New England Regional Student Program

This program enables residents of Connecticut, Maine, New Hampshire, Rhode Island, and Vermont to be considered for admission to programs of study not offered by public colleges in their home states. Applicants selected under this program are granted reduced tuition rates (25 % above regular in-state tuition, rather than full out-of-state tuition). For further information, please contact the New England Board of Higher Education, 45 Temple Place, Boston, Massachusetts 02111.

# *Tuition and Fees*



# 1988-1989 Tuition Rates:

In-state students ..... $936 per annum, $468 per semester

Out-of-state students ..... $3,132 per annum, $1,556 per semester

Foreign students ..... $4,494 per annum, $2,247 per semester

Students aged sixty or over may attend classes tuition-free, provided seating is available after the enrollment of tuition-paying students.

# 1988-1989 Standard Fees

(payable in equal installments at the beginning of the semester, except where indicated):

Application Fee (not refundable or applicable to tuition) ..... $10

Athletic Fee ..... $108

Campus Center Fee ..... $50

Computer Services Fee ..... $30

Educational Service Fee ..... $20

Health Services Fee ..... $32

Library Fee ..... $20

MASSPIRG (optional) ..... $8

Orientation Fee (one time only) ..... $35

Placement Fee (for seniors, one time only) ..... $5

Registration Fee
(for new students; not refundable, but applicable to tuition) ..... $50

Student Activity Fee ..... $48

Student Teaching and Field Experience Fee
(usually seniors, one time only) ..... $75.00

# Room and Board:

The cost of staying in an on-campus residence varies depending upon the facility to which the student is assigned; the current maximum charge for the academic year is $1,430.00 A residence hall deposit of $50.00 is required of all students accepting accommodations; this is not refundable, but is credited against the second semester room charge.

All students living on-campus must enroll in the 19-meal plan, which costs $970.00 for the academic year. For students living off-campus, an optional five-day lunch plan is offered at $480.00 per academic year.

# Insurance:

An optional health insurance plan is available to all students, their spouses, and their children. The current cost of the student policy is $181.00 annually; the rates for the spouse and family plans can be obtained by contacting the Student Affairs Office.

# Refund Policy:

New students, both freshman and transfer, are assessed a non-refundable $50.00 tuition deposit which is credited toward their first semester tuition charges. If a student withdraws prior to the beginning of classes, full tuition, less the $50.00 deposit is refunded. Returning students who have paid their tuition prior to the opening of shcool, and who have notified the school that they will not be attending any classes will be entitled to a full refund of all tuition and fees. After the commencement of semester classes, the policy is as follows:

- If the student withdraws during the first week of classes, two-thirds of the tuition charge will be refunded;
- If the student withdraws during the second week of classes, one-half of the tuition charge will be refunded;
- If the student withdraws during the third week of classes, one-third of the tuition charge will be refunded;
- A student withdrawing after the third week of classes is not entitled to a refund.

Fees are not refundable after the start of classes. Room and board charges are refundable based upon the occupancy agreement and the meal contract respectively.

All costs listed above reflect Trustee policy as of February 1st, 1988; they may be adjusted if so voted by the Board of Trustees, or by the Massachusetts Board of Regents.

**All bills must be paid with either cashier's checks, money orders, bank checks, travelers checks, VISA, or MasterCard. No personal checks will be allowed.** Any indebtedness to the College which becomes past due immediately jeopardizes the student's enrollment, and no such student will be permitted to graduate, or to register for a subsequent semester or summer session. Further, any student who fails to pay all indebtedness to the College may not be issued diplomas, degrees, or other official statements unless otherwise mandated by law.

# *Financial Aid*

Fitchburg State College will attempt to award financial assistance to any academically qualified student whose family and/or personal resources are insufficient to meet College costs. The premise of financial aid programs is that parents and students are primarily responsible for meeting College costs; however, when those costs exceed the amount individuals or their families may be reasonably expected to contribute, financial assistance is appropriate.

# Eligibility

Although Fitchburg State College does not set the standards to measure financial need, the Financial Aid Office will help students and their families with the process of applying under Federal guidelines. The amount of money Fitchburg State receives for financial aid allocation is also determined by the Federal government.

Because of the many factors that are entered into the formula used to determine financial need, no student should assume that he or she is ineligible for financial aid; **all students, regardless of family income, are encouraged to apply.**

A student's eligibility for financial aid is based on financial need, which, simply put, is the difference between educational costs and the family or personal contribution toward those costs. Costs vary according to the individual circumstances of the student, and include such items as tuition, fees, room and board, books, supplies, transportation, and personal expenses. The family or personal contribution is determined by a nationally used formula known as Congressional Methodology (CM), which factors in such items as income, assets, number in household, number in college, age, and such expenses as medical and dental payments, private school tuition, and other miscellaneous data. Thus, like the cost, the amount of contribution will vary, even between households having approximately the same income.

# Satisfactory Academic Progress

While determining and documenting financial need is of primary importance to all financial aid applicants, no less important to the returning student is the matter of satisfactory academic progress, that is, measurable progress toward the completion of a course of study according to the standards of Fitchburg State College. More specifically, students are considered to be making satisfactory academic progress when they have achieved the following:

- 24 semester hours of course work completed prior to entering their third full-time semester;
- 48 semester hours of course work completed prior to entering their fifth full-time semester;
- 72 semester hours of course work completed prior to entering their seventh full-time semester;
- 96 semester hours of course work completed prior to entering their ninth full-time semester.

In addition, students must be maintaining a "C" grade point average prior to their third year of study.

Students are solely responsible for maintaining their academic progress; those who have not done so will be notified of their ineligibility for financial aid during the award letter process. Special circumstances may be heard by the Undergraduate Academic Dean.

# The Application Process

Financial aid funds are awarded on a first-come, first-served basis, according to demonstrated financial need. **To receive priority consideration, all application materials must be received in the Financial Aid Office by March 30, 1989.** Applications are accepted and processed after this deadline; however, late applications may be denied as a result of all available funds being committed to on-time applicants.

The Financial Aid Form (FAF), which may be obtained from the Financial Aid Office or from the guidance department of most secondary schools, should be submitted to CSS, Princeton, New Jersey, **between January 1st and March 1st prior to the academic year in which the applicant will be attending college.** The FAF will reguire four to six weeks to process.

Applicants are required to apply for the Pell Grant by checking the appropriate boxes on the FAF, or by submitting a Federal Application, available at the Financial Aid Office. The applicant will receive a Student Aid Report from the Pell Processor which must be submitted to the Financial Aid Office. Additionally, all students are required to apply for State Scholarship or Grant Assistance. Once the CSS has processed the applicant's FAF, it will send a report to the Finanical Aid Office, and a verification of filing to the applicant's home.

N.B.: In order to complete the FAF properly, applicants and their parents must complete their Federal Income Tax Forms, as information from the latter is required for the former.

In addition to the FAF, applicants are required to submit several other forms to the Financial Aid Office in order to complete their file; please consult the Guide to Financial Aid 1988-1989, available at the Financial Aid Office at Fitchburg State College, for further information.

# Financial Aid Programs

Financial aid programs fall into four main catagories: gift-aid, scholarships, student loans, and work programs.

## *Gift-Aid*

Gift-aid is usually in the form of grants or scholarships, and does not need to be repaid or worked for. The following programs are available through Fitchburg State:

**Pell Grant Program-** Named after its sponsor, Senator Claiborne Pell, this program was formerly known as the Basic Educational Opportunity Grant (BEOG). It is a federally-funded entitlement program designed to assist students who have exceptional need. Grants may be as high as $2,100 during an academic year (July 1st to June 30th). All students applying for financial aid and Guaranteed Student Loans must apply for the Pell Grant.

**Supplemental Educational Opportunity Grant (SEOG)-** This federally sponsored program awards funds to students with extreme financial need who would otherwise be unable to attend a postsecondary institution. Grants may range from $200 to $2,000 per academic year, although they are limited by the amount the College is allocated, and must be matched dollar for dollar by self-help aid.

**Massachusetts State Scholarship Programs-** These seven programs are administered by the Board of Regents of Higher Education. Information about them is contained in the Massachusetts version of the Financial Aid Form (MFAF).

All students who are residents of the Commonwealth are required to apply for aid from these programs. Scholarships may range from $200 to $1,000 per academic year. Students are notified directly from the State Scholarship Office in Boston, and must complete the requirements as stated in their award letter. The Financial Aid Office verifies information and processes payments for state scholarship programs during the year.

**Other States' Grants-** Students from other states may be eligible to receive a grant or scholarship from their respective state. Each program has its own individual guidelines and deadlines, and therefore, students are urged to contact the appropriate agency in their state for further information.

**Tuition Waver-** This is a state-funded program, whereby Massachusetts residents with a demonstrated need receive a reduction in tuition. Award amounts vary, but they will not exceed the total tuition cost for which a student is billed.

**Fitchburg State College Grant (FSCG)-** These are state supplemental funds received by the College, which are used as grant assistance for needy students. Grant amounts vary, and are usually in addition to other financial aid awards.

**Fitchburg State College Scholarships-** In addition to the gift-aid programs listed previously, F.S.C. has numerous scholarships of its own. They are awarded at various times throughout the year, and are publicized via bulletin boards and other campus media. These scholarships are administered by the College Scholarship Committee, or by the appropriate area representative, and may require that a Financial Aid Form (FAF) be on file to assist in the evaluation of need.

## *Scholarships*

Scholarships currently available are:

**Alumni Scholarships:** available to currently enrolled students with financial need, provided they are in good academic standing.

**Departmental Scholarships:** which offer a unique opportunity for upperclass students to work closely with the departmental chair in their discipline. High consideration is given to those students with a record of academic excellence and previous departmental service. Finanical need is not a requirement for consideration, and decisions are made through each specific department.

**Parking Scholarships:** available from fines collected for illegal on-campus parking to students who have completed at least one semester, and who have at least one year remaining at the College.

**Performing Artists Scholarships:** available to outstanding performing artists who are full-time undergraduate students.

**The President's Honor Scholarships:** awarded in recognition of the scholastic achievements of entering students. The College will accept applications from secondary school seniors and transfer students who have demonstrated excellence in their studies and academic endeavors.

**The President's Scholars Awards:** available to students who have completed a minimum of 30 semester hours at the College and have achieved a grade point average of at least 3.75.

**Special Education Scholarships:** available to full-time students who are special education majors and graduates of a Massachusetts secondary school. This scholarship is funded by the Commonwealth.

**Student Government Association Scholarships:** avaiable to sophomores, juniors, and seniors with a grade point average of 2.2 or above, and a record of student leadership.

The following Fitchburg State College scholarships are named in grateful recognition of their benefactors:

**Mattie N. Antilla Poetry Award:** given annually to the student writing the best poem in that year's competition. The award is made possible by Fauri and Signe Sipila in memmory of Signe's parents, Mattie N. and Fanny P. Antilla.

**Thomas Cardamone Scholarship:** awarded to a full-time undergraduate student enrolled in any of the Industrial Technology disciplines.

**William E. Clark II Memorial Scholarship:** awarded to a student who evinces academic achievement, financial need, and the potential to succeed.

**Wallace Cunningham Scholarship:** awarded to a student evincing high academic achievement and a demonstrated financial need.

**William Devries Memorial Scholarship:** awarded to a student evincing high scholastic achievement and a demonstrated financial need. Preference is given to a member of the Fenwick Society.

**Henry Frank Scholarship:** awarded to full-time entering freshmen and transfer students from Norwalk, Connecticut, or from within a fifteen-mile radius of Orange, Massachusetts, with a preference given to the former. Selection is based upon academic achievement.

**Grace Gummo Nursing Scholarship:** awarded to deserving students in the Nursing Program.

**Patrick and Mary Hammond Band Scholarship:** awarded to a full-time undergraduate student chosen as the outstanding member of the Fitchburg State College Band.

**Kirkpatrick-Percival Scholarship:** awarded to an outstanding senior Psychology major.

**LeBlond-O'Sullivan Memorial Scholarship:** awarded to full-time juniors or seniors with financial need and a record of service to the College.

**Buddy McMurray Good Fellowship Award:** given to a student whose contribution to the College is positive, salutory, and inspirational, indicative of the goals he or she set by entering Fitchburg State.

**John McNaney Memorial Scholarship:** available to a Chemistry Major.

**Dorothy Meilinger Memorial Scholarship:** awarded to seniors majoring in Special Education who have a grade point average of 3.5 or above, and a demonstrated finanical need.

**Flora D. Mulholland Memorial Scholarship:** awarded to a Nursing major evincing high scholastic achievement and a demonstrated financial need.

**M. Lilian Smith Scholarship:** awarded to a student pursuing a course of study in Education.

**Michael Vignale Memorial Scholarship:** available to a Chemistry major.

**Carl T. Witherell Scholarship:** awarded to full-time undergraduate students who are Industrial Arts majors.

**Xarras Scholarship:** awarded to full-time undergraduate students with preference given to graduates of Fitchburg High School.

**Army R.O.T.C. Program-** This program offers financial aid ranging from $2,500 for two years to over $10,000 for four years. A variety of options are available to include scholarships that pay tuition, fees, and the cost of books plus $1,000 per year (tax free). Nursing students have special scholarships.

The Army R.O.T.C. Scholarship is designed to offer financial assistance to outstanding young people in the four-year Army R.O.T.C. program who are interested in the Army as a career, or in the Army Reserves as a supplemental career. The four-year scholarships are normally awarded prior to the start of the student's first year.

Three-year and two-year scholarships are available through the on-campus program. Students may participate in a non-scholarship status, and a variety of financial packages can be arranged.

For more information, contact the Army R.O.T.C. representative at (508) 342-3190, (617) 769-3061, or (508) 345-2151, Ext. 3408.

## *Student Loans*

Student loans are long-term, low-interest loans which come due only after graduation or withdrawal from college. Three such programs are:

**Perkins Loan Program (PERK)-** Named in honor of Senator Carl Perkins, this program was formerly known as the National Direct Student Loan (NDSL).

The current interest rate of 5% is charged on the unpaid balance of the loan, with repayment and interest accrual commencing nine months after graduation or withdrawal from classes.

All terms and conditions of this loan are stated on the Promissory Note, Truth-In-Lending Statement, and Rights and Responsibilities Statement, copies of which will be provided to those requesting such information, in addition to a sample loan repayment schedule. Provisions for deferment, postponement, or cancellation are available for some specialized areas.

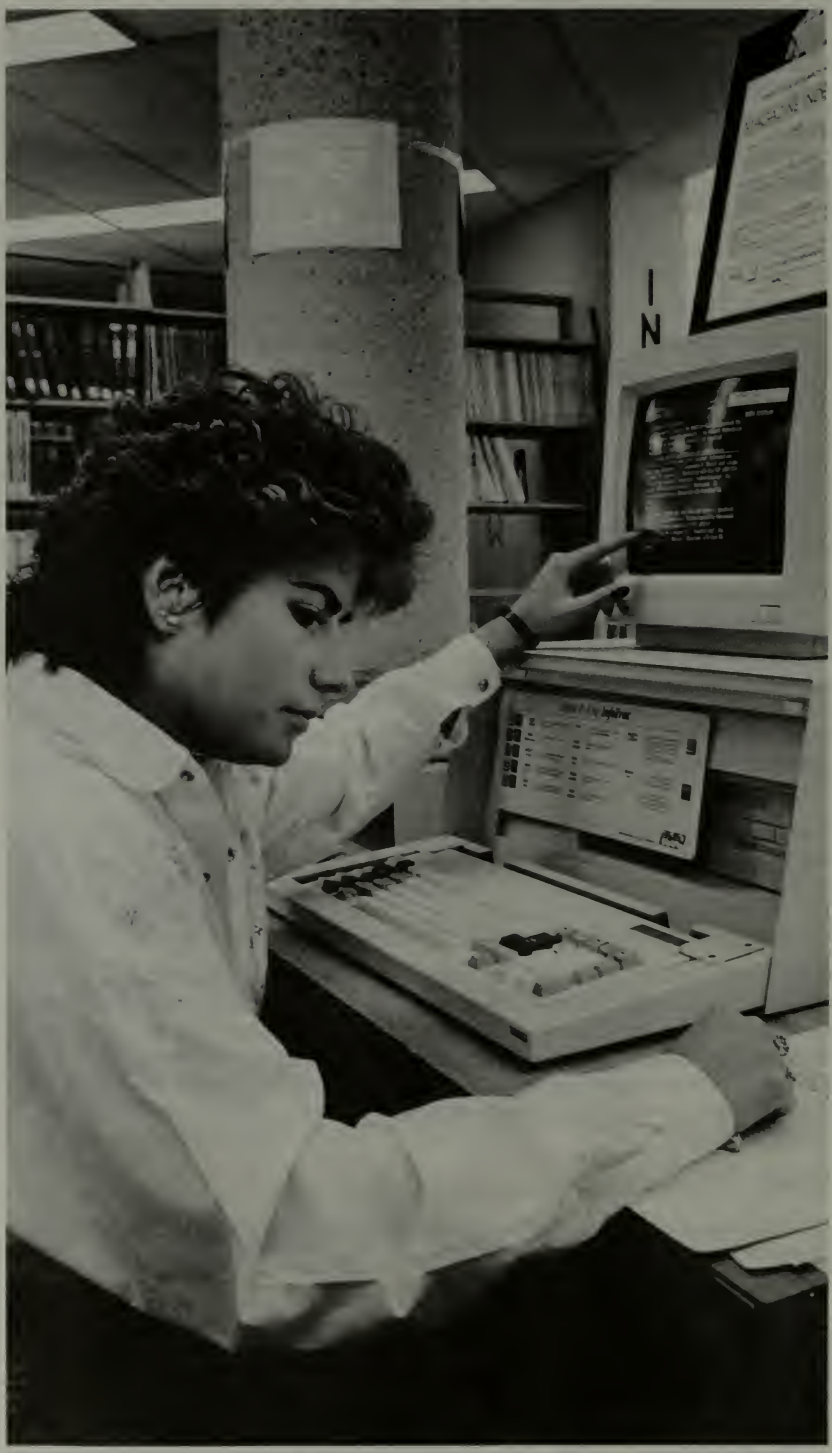
**Nursing Student Loan (NSLP)-** This program is designed to assist students in furthering their education in the field of Nursing. The current rate of 6% is charged on the unpaid balance of the loan, with repayment and interest accrual commencing nine months after graduation or withdrawal from classes. Students should consult the Loan Collections Office for more information about repayment and deferment.

**Guaranteed Student Loan (GSLP)-** This program enables students to apply to local lending institutions for educational loans to help meet educational expenses. The Federal Government pays the 7%, 8%, or 9% interest rate on the loan while the students is in school, with repayment commencing either six or nine months (depending upon the institution) after graduation or withdrawal from classes. Eligibility is based upon demonstrated financial need. The Financial Aid Office has a list of participating lenders in Massachsusetts.

## *Work Programs*

Work programs usually supplement the gift-aid and loan components of the student's financial aid package, giving the undergraduate the opportunity for "earning-while-learning." Available programs include:

**College Work Study (CWSP)-** This is a federally funded program providing part-time on-campus employment through which students may finance a part of their educational costs. Students are paid directly on a bi-weekly basis for the number of hours they've worked; thus College Work-Study is not deducted from the College bill. Students may work during the academic year, and during the summer. Open positions are posted in the Financial Aid Office. N.B.: Students offered College Work-Study are not guaranteed employment.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**Massachusetts Educational Employment Program (MEEP)-** This program operates in a similar manner to the College Work-Study Program; however, funding is provided by the Commonwealth of Massachusetts, and the position accepted by the student must relate in some way to his or her major.

**Fitchburg State College Employment-** The College offers part-time employment on campus to its students. These positions are **not** open to students who have had their financial need met by the other programs mentioned above. Students are paid according to the salary rate offered with the position, and they should apply directly to the office advertising for help.

**Off-Campus Employment Center-** The Career Counseling Center has established this service to help meet the needs of students seeking part-time employment off-campus. The Center, located on the third floor of the Hammond Building, receives job postings from the local community, and has organized a substantial listing of various employment opportunities. Positions currently available are posted on a bulletin board in the G-Lobby of the Hammond Building. Many of these positions offer flexible hours to accommodate your academic commitments.

**Please remember that Financial Aid is not renewable, and must be applied for each year!**

# Veterans Education

Veterans should contact the Registrar's Office to establish eligibility for benefits, and to confirm that all the necessary paperwork has been completed. When applying for benefits, the veteran should bring the following documents to the Registrar's Office: a DD214 Form (a nortarized copy), his or her marraige certificate, and birth certificates for each dependent child. The Registrar's Office will provide the veteran with an Application for Benefits or the Change of Place of Training Form, whichever is applicable.

All veterans are urged to keep themselves informed about benefits available to them through the Veterans Administration. Information may be obtained from:

John F. Kennedy Federal Building
Veterans Administration—Regional Office
U.S. Government Center
Boston, Massachusetts 02203

Vietnam veterans from Massachusetts are entitled to attend Fitchburg State College on a no-tuition basis. Additional information may be obtained from:

The Commonwealth of Massachusetts
Department of Education
1385 Hancock Street
Quincy, Massachusetts 02169

# *Beyond the Classroom: Student Life*

At Fitchburg State College, human development extends beyond the classroom and into the total campus environment. The College offers a variety of avenues for self-discovery and expression. It encourages the maturation of the individual and the group—emotionally, physically, socially, and spiritually—through co-curricular activities.

Fitchburg State students who choose to become active in campus life, accepting new commitments and added responsibilities, often find the avenues which will direct them toward their career and other life goals. They develop significant, helpful, enduring relationships with faculty, administrators, and other students, thus establishing a support network which will help sustain them in the years to come.

# Residence Life

## *On-Campus Housing*

Three campus residence halls and an apartment complex provide housing for more than eleven hundred students while Fitchburg State is in session. All residence halls are conveniently located within easy walking distance of classrooms, offices, and other centers of activity on the campus. Holmes Dining Commons is situated adjacent to the residence halls, and provides meals for all residence hall students as well as for many students who live off-campus.

Aubuchon Hall, which houses approximately 380 students, is a high-rise with ten residential floors, each of which has a television area, laundry facilities, and a kitchen area; in addition, the first floor offers a full kitchen, lounge, and study room. Russell Towers, which opened in the fall of 1971, has thirty-six suites, twelve in each of its three towers. Family-style living is the order of the day here, as the suite arrangement, with its individual kitchen and lounge area, encourages the formation of small, closely-knit communities within the larger Russell Towers community. Herlihy Hall, which was extensively renovated in 1977, is the smallest residence with approximately 140 students living on its three floors; it features a television lounge, a full kitchen, a large recreation room, and a laundry room, all located in its basement. The townhouse-style apartment complex, Fitchburg State's newest residence facility, offers a very special living opportunity. Every apartment in the seven buildings is equipped with a combination living room/kitchen area, one and one-half baths, and separate bedrooms.

Accommodations for disabled students are located in Aubuchon Hall, in Russell Towers, and in the townhouse complex.

Most residence hall rooms are double rooms, although some larger rooms accommodate three to four residents, and a few—extremely few—single rooms are available. All rooms are equipped with basic furnishings such as a bed, dresser, desk, and chair; students must provide their own linen, towels, study lamps, and mattress pad or cover.

Residence halls are much more than places to sleep. These living centers are a major focal point of campus activity, largely through the efforts of the hall councils and the residence staff. The hall council in each building is comprised of elected student representatives, and it works to plan activities and promote student interests. All four campus residences also have both student and full-time residence staff to assist its occupants with their personal and social needs.

Residence hall space is extremely limited. Students desiring housing are advised to apply for admission-with-housing well in advance of the admissions deadline. Questions concerning on-campus housing should be directed to the Residence Life Office, Aubuchon Hall.

## *Off-Campus Housing*

Over two-thirds of the students at Fitchburg State College do not live in on-campus residences. A large number live in apartments or rooming houses in the campus area. The campus is convenient to supermarkets, laundry facilities, and shopping centers, and many students find the off-campus lifestyle attractive because it affords them the opportunity for increased independence and a chance to experience life in the "real world." Students living off campus participate in all campus activities, and have their own governing body, the Commuter's Board.

The Off-Campus Housing Coordinator maintains a listing of rental units available within the campus area and offers assistance to students who wish to share apartments with other students. The Off-Campus Housing Office is located in Aubuchon Hall; for further information, please contact the Residence Life Office.

# Educational, Cultural, and Social Programs

## *Campus Center*

The Campus Center is a haven for commuter and resident students alike who regard it as a unifying force on the Fitchburg State College campus. The Center is organized to meet the co-curricular needs of the College Community and dedicated to fostering and promoting its spirit by providing opportunities for positive human development through the social, cultural, and recreational programs it offers, and by the convenient and economical services it administers.

The Center's facilities include: the campus information center, art gallery, and craft center; the College bookstore and post office; student offices and meeting rooms; a cafeteria, pub, and vending service area; and the Alumni Association Office. All facilities have been specially designed for easy access by disabled individuals.

Some of the programs and services generated from Campus Center funds are: a weekly calendar of campus activities, mini-courses in everything from arts and crafts to disco dancing, recreational tournaments, films, lectures and demonstrations, videotaped entertainment, performing arts, free access to outdoor recreational equipment, and visual art exhibitions.

The Campus Center Resource Office (CCRO) is another service of the Campus Center. Its staff advises and assists student organizations with the creation, organization, and implementation of their programs. The Office maintains complete files and information about the multitude of program opportunities available to the College community. The CCRO has presented programs on such topics as leadership training, contract assistance for programs, and leading volunteer groups; in addition, they have provided invaluable assistance with the film, lecture, and performing arts series, visual arts exhibits, and special events.

# Student Organizations

## *Student Government Association (S.G.A.)*

The purpose of the Student Government Association as set forth in its constitution is:

> *". . .to encourage responsibility and cooperation in democratic self-government; to form an official body for expressing the judgements of students and fostering the activities and matters of general student interest; to promote full understanding and cooperation among students, faculty, and administration in order to further the welfare of the college."*

All students enrolled as full-time undergraduates are members of the Student Government Association, by virtue of having paid the Activity Fee. The governing body of S.G.A. is the S.G.A. Council, which is comprised of an Executive Board, a Commuter's Board, residence hall presidents and vice-presidents, and four representatives from each of the classes. Elections are held every spring for the upperclassmembers, and in the fall for freshmen.

The S.G.A. is the official voice of the students and participates in campus-wide committees and state and national student organization; in addition, its standing and ad hoc committees are a vital force in campus affairs. Its Programs Committee, for example, works with the Campus Center, the CCRO, and other student organizations to provide many of the activities for the College. Its various sub-committees are responsible for such events as the regular presentation of feature films in the Campus Cinema, the engagement of entertainment for the pub and coffee house, and various concerts, lectures, and seminars.

The S.G.A. offers a number of services to its membership including programming, photocopying, and legal advice. Student participation on any organizational level is welcomed and encouraged.

## *Musical Groups*

Fitchburg State College offers a variety of musical programs for both the participant and the music lover. The College has a fine 60-piece Concert Band that performs music of all types, from the transcriptions of classics to contemporary sounds. The Jazz-Rock Ensemble features big band, jazz, rock, and experimental music for stage bands. Opportunities for small ensemble participation exist whenever instrumentalists are available; smaller groups have included brass, woodwind, and recorder ensembles. For vocalists, the F.S.C. Choir provides an opportunity to sing a wide selection of mixed-voice choral pieces.

## *Clubs, Fraternities, Sororities, and Other Groups*

The College encourages participation in all its student organizations; through these laboratories for expression, students can develop skills which will last a lifetime. A multitude of organizations, encompassing a broad spectrum of interests, operates on campus, offering the student many options. Membership in college clubs and organizations is generally open to all F.S.C. students; for meeting times and locations, contact the Campus Center Scheduling Office. A list of the organizations on campus includes:

Accounting Society
Aubuchon Hall Council
Band
Biology Club
Business Labs
Choral Arts Association
Communications Club
Commuters Board
Computer Science Club
Cultural Society for Minority Students
Dancin' Club
Data Processing Management Club
Early Childhood Club
Economics Club
Geography Club
Herlihy Hall Club
Honors Club
Human Services Club
Industrial Technology Association
Inter-Fraternity/Sorority Council
International Student Union
Intervarsity Christian Fellowship
Intramural Board

Karate Club
Marketing Club
Masspirg
Math Club
Med Tech Club
Newman Assocation
Nursing Student Assocation
Outing Club
Psychology Club
Russell Tower Hall Council
Saxifrage (Yearbook)
Scrimshaw (Literary Magazine)
Society for the Advancement of Management
Sociology Club
Special Education Club
Stageright
Student Government Association
Strobe (Student Newspaper)
Townhouse Board of Governors
Volleyball Club
WXPL Radio Club
Women's Athletic Association

**Fraternities and Sororities**

Adelphian Society
Esoteric Society
Fenwick Society
Gavaleer Society
Neasylon Society
Phi Alpha Theta
Philodemic Society
Tokalon Society

## *Religious Life*

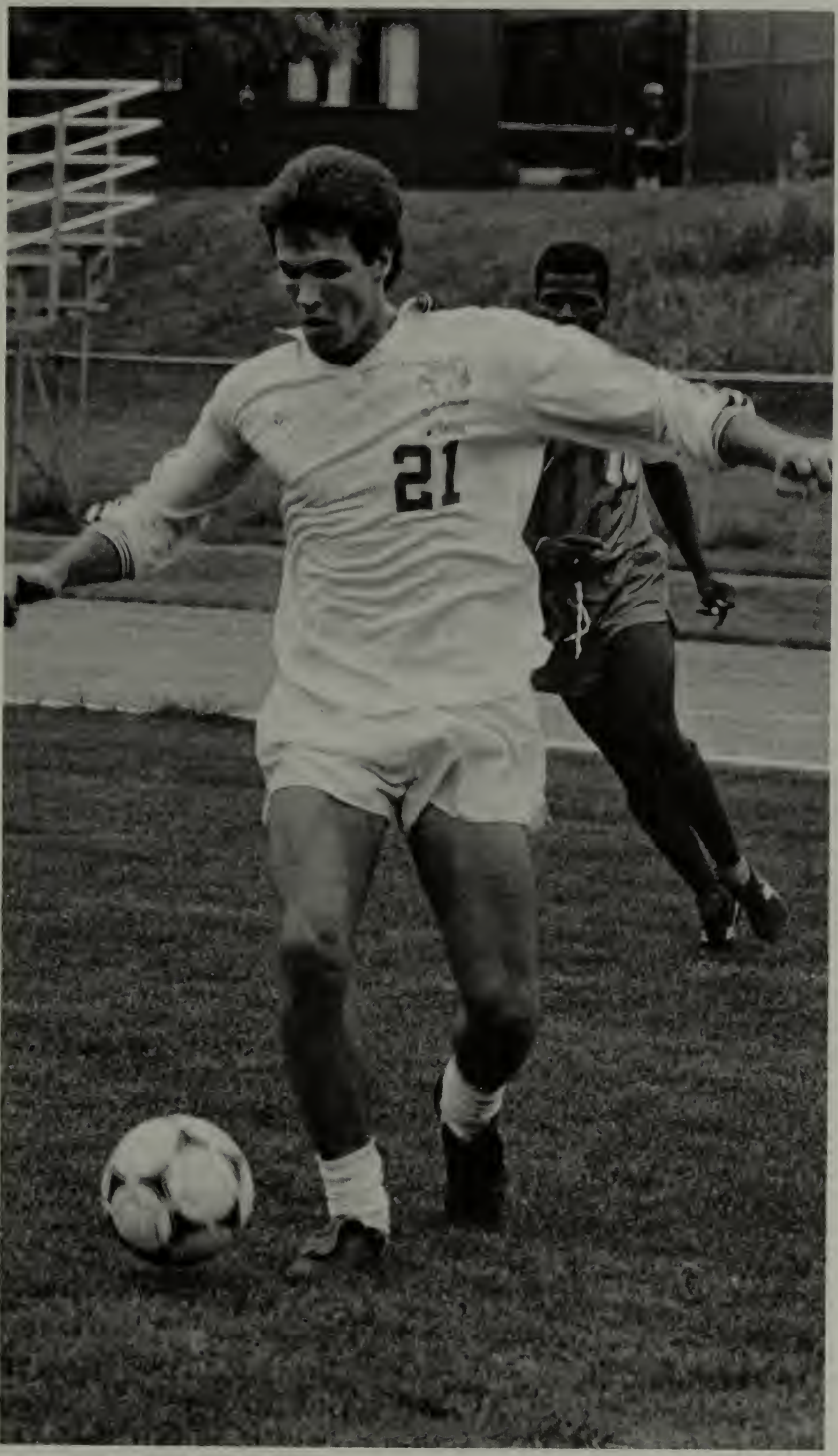
Many churches, synagogues, and other religious congregations are located within walking distance of the campus; in addition, the Newman Center Student Parish, whose modern Center was built with the help of Fitchburg State Industrial Arts students, provides a spiritual and social gathering place for many students. The Center, which hosts many student functions throughout the academic year, is located on Highland Avenue, adjacent to the College.

# Sports and Recreation

The Department of Athletics at Fitchburg State College, supported by the Athletic Fee, offers each student an opportunity to participate in activities at the varisty, intramural, and recreational levels in order to develop the person first, the student second, the athlete third, and the champion fourth.

## *Intercollegiate*

The men's programs include competition in cross country, spring track and field, football, soccer, basketball, ice hockey, baseball, indoor track, and tennis. The women's programs include competition in cross country, spring track and field, field hockey, volleyball, basketball, fast-pitch softball, indoor track, and tennis. Our teams have enjoyed regional and national recognition as members of the NCAA's Division III, and many of our student-athletes have been honored for their athletic achievements in being named to various All-American and All-New England teams.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Fitchburg State College is a member of the Massachusetts State College Athletic Conference; the National Collegiate Athletic Association; the Eastern Collegiate Athletic Assocation; the New England Athletics Congress; the New England Athletic Conference; the Massachusetts Association of Intercollegiate Athletics for Women; the United States Women's Track Association; the New England Women's Intercollegiate Cross Country; Track and Field Association; the Eastern Intercollegiate Athletic Association; New England Football; the New England Women's Basketball Association; the New England Intercollegiate Baseball Association; the New England Division III Track and Field Association; the Athletic Congress of the USA; the New England Intercollegiate Amateur Athletic Association; the Intercollegiate Soccer Association of America; the New England Intercollegiate Softball Association; and the Amateur Athletic Union, which entitles successful Fitchburg State teams to compete in tournament and championship play at the Division III level.

For the purpose of athletic eligibility "satisfactory progress toward a baccalaureate" shall be defined as successful completion by students of 24 semester hours of course work prior to entering their third full-time semester; 48 semester hours of course work prior to entering their fifth full-time semester; and 72 semester hours of course work prior to entering their seventh full-time semester. Full or part-time status shall be determined by the end of the ADD/DROP period. In addition, students must maintain the following academic averages (semester and cummulative): 0-29 semester hours 1.6; 30-59 semester hours 1.8; 60 or more semester hours 2.0. Students on academic probation are ineligible for intercollegiate athletics. There is a one-time exception to this policy for a student who is on probation for the first time, whose cumulative grade point average is above 2.0, and whose probationary status is based solely upon their previous semester's average.

## *Intramural/Recreation*

An active intramural/recreational program offers the opportunity for all students to participate in a wide range of sport and recreational activities. Student involvement plays a large part in the success of the program, the goals of which are fair play, cooperation, fun, and enjoyment. Competition is offered in such sports as co-rec volleyball, street hockey, basketball, flag football, and soccer; additionally, special activities such as canoeing, white water rafting, 3-on-3 hoop, and Superstars contests add to the variety offered to the students.

The Fitchburg State College Intramural/Recreation council is a student-run organization which helps promote and administer the various sports and activities, aiding the Department of Athletics in encouraging student involvement and in promoting its goal of leadership development. All recreational activities attempt to reflect the interests and needs of the entire College Community.

## *Outdoor Recreation in the Montachusett Area*

The Outing Club and the Campus Center encourage a number of outdoor activities which take advantage of the College environs: bird watching, nature walks, cross-country skiing on the natural trails of nearby wooded areas, or jogging and bicycling around and over the hilly terrain of Fitchburg itself. Mt. Wachusett and Mt. Watatic offer some of the best skiing in Massachusetts, and are only minutes away by car, as are river rapids for white water rafting. Mt. Monadnock is less than an hour away; from its peak the hiker can gaze at a panorama that stretches from Boston to Mt. Washington and beyond. State forests in the area offer facilities for picnicing and camping, as well as lakes, ponds, and streams for fishing and swimming. All in all, the Montachusett area has some of the best recreational opportunities in the Commonwealth, and they're all at the disposal of the Fitchburg State College student.

## *Facilities*

Parkinson Gymnasium contains volleyball courts, basketball courts, a weight room for training and conditioning, and the Office of the Certified Athletic Trainer. Outdoor athletic facilities, located at the Robert G. Eliot Complex on Pearl Hill Road, include fields for soccer, football, field hockey, baseball, and intramurals; a chemturf track; tennis courts; and outdoor basketball courts which double for ice skating during the winter. The gymnasium at the McKay Campus School is used for intramural activities and is the location of our varsity softball diamond. All ice programs are held at the George Wallace Civic Center. The offices of the Department of Athletics are in the Anthony Building on the main campus.

# Student Rights and Responsibilites

The philosophy behind the Student Judicial System at Fitchburg State College is that student conduct is a personal responsibility. The Student Judicial Code was developed as a cooperative effort among students, faculty, and staff in order to provide a comprehensive listing of College regulations and sanctions and to establish fair processes for dealing with instances of student misconduct. The central focus of the Judicial System is the Student Judicial Board which is administered by the Student Government Association in conjunction with the Office of Student Affairs.

College regulations apply on campus and at all College-sponsored affairs wherever they might take place. These regulations include federal, state, and local laws, as well as rules and ordinances conducive to the attainment of the goals of the College. The following list, while by no means an exhaustive one, gives examples of areas covered by the Student Judicial code: academic honesty, false representation, tampering with College records, theft, vandalism or intentional destruction of College property, harassment, physical assaults, possession and/or consumption of alcoholic beverages or controlled substances in violation of College guidelines, and possession and/or use of firearms. The complete text of the Student Judicial Code is available in the Student Handbook or from the Student Affairs or the Student Government Association Offices.

Students who have been placed on Disciplinary Probation, or who have been suspended or expelled will not be allowed to serve on campus representative committees, hold appointed or elected campus-wide office, or be a member of any intercollegiate athletic team; nor shall any student placed on Disciplinary Probation be eligible to apply for any campus-based financial aid during the second semester of a two-semester probation.

# *Student Support Services*

# Academic Advising Center

The Academic Advising Center is staffed by regular full-time faculty chosen for their specific expertise in assisting students make the best possible use of their academic experience. The Center, located on the first floor of Thompson Hall, is open when classes are in session. While students have faculty advisors in their major departments, the Advising Center specializes in assisting undeclared students, non-traditional students, students experiencing academic difficulty, and students needing help in interpreting specific academic regulations. In addition to the faculty advisors, the Advising Center staff includes a secretary and part-time staff who assist students by answering general questions and by distributing the Center's informational handouts on various subjects. The Academic Advising Center is supervised by the Assistant to the Vice President for Academic Affairs.

The Center also sponsors a support group for Mature and Returning Students (M.A.R.S.). The group meets weekly and schedules various events especially for older students.

# A.I.D. (Alternatives for Individual Development)

The Alternatives for Individual Development program is designed for students who possess the motivation and academic potential to receive a college education, but have been denied access because of cultural, economic, or educational disadvantages. The paramount focus of the program is the education and graduation of its students.

Potential students must meet certain qualifications. They must be residents of Massachusetts and must meet at least one of the following criteria: they must have attended an urban high school, or have participated in METCO or an Upward Bound program, or be receiving public assistance. In applying to the College, students interested in the A.I.D. program should answer "yes" to question fourteen on the admissions application, and complete all the other questions.

Students admitted into the program receive supportive services in developmental reading, writing, mathematics, and study skills. Tutoring is available in a wide variety of academic subjects by tutors who are selected from among the highest-achieving, most caring members of the student body at Fitchburg State. The A.I.D. staff maintains an open-door policy for academic counseling and advising. Through referrals, the staff involves students with many other College faculty and counselors who possess the special skills to help students cope with academic, financial, social, and personal concerns.

The A.I.D. office is located on the third floor of the Hammond Building, Room 309. The telephone extension in 3264.

# Career Services

The Career Services Center offers career development activities for students seeking to enter the job market. The Center encourages students in increasing their self-understanding, one of the keys in choosing the right career, and provides counseling, guidance, and other assistance important to career planning. Some of its services include: regularly scheduled outreach programs in classrooms and residence halls; *The Edge,* a newsletter highlighting career opportunities and job market trends, published monthly throughout the school year; and the Career Resource Center, which is stocked with career resource directories, career and company literature, and other items to assist students in finding the career that suits them best.

The Center provides students with information on job search strategies, whether they are seeking full- or part-time, permanent or temporary, upper-or entry-level work. The staff maintains job vacancy notebooks which contain local, state, national, and international listings. The Center provides handouts and workshops addressing the problems of resume and interview preparation. It also maintains credential files, and coordinates on-campus interviews between employment recruiters and students. (All graduating students should complete a placement registration card, thereby becoming eligible for Fitchburg State's job matching service.)

The Career Services Center also provides testing and consulting services. Vocational development testing is available to students who wish to explore their career interests, personality, and values. Additionally, several national programs of standardized testing are administered through the Center: The Graduate Record Examination (GRE), the College Level Examination Program (CLEP), the Miller Analogies Test, and the Medical College Admissions Test. Inquiries regarding these tests should be made at the Career Services Center. The Center, which is located on the third floor of the Hammond Building, Room 313, is open from 8:30 a.m. to 5:30 p.m. weekdays. Students may stop in to use the resources or may make appointments for career counseling or other services by calling extension 3151 during office hours.

# The College Computer Center

The Fitchburg State College Computer Center has facilities to service the administrative, educational, and research needs of the campus. The principal unit of equipment at the present time, is the Control Data Computer CDC Cyber 180-810 Main Frame Computer, which is connected to the Regents Computer network in Boston in a multihost configuration. Additionally, the Center has a large DEC VAX 8530 to enhance the computing environment. Other equipment includes: our twenty-eight interactive terminals, line printer, and a micro-computer (disabled individual access) that are primarily for academic use by students and faculty, located in the Edgerly Building; AT & T Micro Computers located in each academic department; and three Micro labs, two in Edgerly and one at McKay, for student use. Connections between computing resources are provided by the AT & T Information Systems Network Local Area Network. The Local Area Network, with almost 400 nodes using fiberoptics, allows computing resources to be physically dispersed across the campus, and yet still allows them to be an integral part of the College computer resources.

Computer usage ranges from the computation of assigned classroom problems to the support of special projects of administrators and faculty. Many students begin to use the computer early in their programs of study, some continuing to do so through their graduate programs. Opportunities to pursue courses of study in computer science and management information systems are available at F.S.C. and are described elsewhere in this catalog.

In addition to the central computing facility, the Computer Science Department has the following hardware on hand: a Digital VAX/11-730 System, two INTEL Multi-User Micro-Computers, four AT & T 3B2 Super Micros, three Industrial-type Robots, Lexidata 8400D Unit Based Industrial Graphics Systems, LSI-1103s, two Motorola Industrial Development Systems, ten Zenith Micro-Computers, two Truevision image processing stations, seventy Heath ET-3400 Microprocessor Trainers, and twenty Heath ET-6800 Assy Language Trainers for hands-on laboratory use. These systems allow the students to work on design experiments which would be impossible, or, at the very least, impractical on the large central computers. Students are exposed to a wide variety of software, including the languages Basic, C, Ada, Pascal, Lisp, Prolog, Fortran, Cobol, and Modula, in addition to Statistical and Word Processing Packages.

The College Computer Center and the Computer Science Department are located in the Edgerly Building.

# The College Library

The Fitchburg State College Library, located in the Hammond Building, is a comprehensive information center, with source materials available in a variety of formats. The library collection of 181,000 volumes (151,000 printed books and 30,000 microbooks) includes an 11,000 volume reference collection and a children's collection of 7,000 volumes. The library also houses an expanding Special Collections Department which includes the College Archives and the Robert Cormier Collection. The library subscribes to approximately 1,200 periodical titles, which are indexed in the periodical abstract and indexing services located on the first floor. The Periodicals Department also includes the Resources in Education Collection (ERIC), a comprehensive, updated education library retrieval system on microfiche. The system consists of a growing collection of some 250,000 items, and an updated pamphlet file of 4,500 items. The library's record collection contains about 4,000 titles, with classical, popular, folk, jazz, rhythm-and-blues, rock, and spoken selections. In addition, the library now offers fee-paid, on-line data base searching.

The library provides study carrels, study tables, and lounge seating on all four of its floors; semester hours, as well as the hours for the exam period, January Intersession, and the summer are posted near the Information Desk. Service for the collections is provided by professional librarians, who also conduct library instruction classes for the College community. To arrange for such a session, please contact the staff at the Library Information Desk (Ext. 3223).

# Counseling Services

Counseling Services provides confidential short-term counseling services to all students at no charge. Psychotherapists are available for individual counseling, group and couples counseling, educational progrmaming, crisis intervention, workshops, and community referrals.

Counseling Services is located on the third floor of the Hammond Building. Its hours are 8:30 a.m. to 5:00 p.m. three days a week, and 8:30 a.m. to 7:30 p.m. two days a week. Emergency and drop-in hours are available daily; appointments can be made in person or by calling extension 3152.

# Developmental Skills Center

The College maintains a Developmental Skills Center which is, in fact, a group of four centers whose purpose is to assist those students who wish to increase their proficiencies in reading, writing, or mathematics, or who wish to sharpen their overall study skills. The Center is open from 8:30 a.m. to 3:30 p.m. Monday through Friday (check with the Mathematics Department regarding the Mathematical Skills Center's hours) and its services are offered at no charge to Fitchburg State College students.

## *Mathematical Skills Center*

The Mathematical Skills Center, under the direction of the Mathematics Department, provides peer tutoring to all college students on a drop-in basis. Assistance is available in most areas of mathematics, from arithmetic to calculus.

### *Reading Center*

The Reading Center offers programs designed to meet the individual needs of all students. The Center has enrichment programs for slow readers with good comprehension who want to increase their speeds and programs for students who wnat to build stronger vocabularies, in addition to comprehension exercises to help students better understand what they read. All students are taught how to adjust their reading speed to meet their own particular needs.

Students may enroll in reading courses at any time and select hours that are convenient for them.

### *Study Skills Center*

The Study Skills Center offers programs for students wishing to review or sharpen their study skills, as well as programs for students who wish to develop a system of successful college-level study practices. Students may choose to concentrate on one particular area such as test-taking skills, outlining practice, or effective study habits (or spelling, for which the Center offers a special intensive course), or several areas at once. The Center uses a wide variety of instructional resources, including a computer-assisted instruction facility.

### *Writing Skills Center*

The English Department operates the Writing Skills Center, which is staffed by both faculty and peer tutors, and where students may get help for all types of writing problems, from planning to punctuation to proofreading. Any instructor at the College may refer a student to the Center, and any student who desires to take advantage of the many programs and materials available there may do so by simply applying.

## Disabled Student Services

The Student Affairs Office, in conjunction with the Director of Facilities, provides ongoing assistance in gaining access to College programs and services to students with physical disabilities. Disabled students are strongly encouraged to schedule a preorientation interview with the Student Affairs Office (Ext., 3130, 3131) to determine what special accommodations they may require.

## Health Services

Student Health Services provides easily-accessible, quality health care to the student community at a reasonable cost. The annual Health Services Fee funds prevention, education, and referral programs, as well as diagnostic and clinical care services. Such programs include blood pressure screening, CPR training, an annual Health Fair, and health care workshops.

On-campus health care is provided through the cooperative efforts of a staff physician, a nurse practitioner, registered nurses, and a certified medical assistant. The Health Service provides treatment for episodic illnesses and injuries, with referral to appropriate local hospitals and physicians when necessary. In addition, arrangements can be made through the Health Service for certain types of immunizations and allergy injections.

The Health Service, located in the Anthony Building, is open from 8:00 a.m. to 8:00 p.m. Monday through Thursday, and from 8:00 a.m. to 4:00 p.m. on Friday.

# New Student Orientation

The goals of the Orientation program at Fitchburg State College are as follows: to provide students with the most complete academic information possible so that they can make intelligent course selections; to acquaint them with the facilities, programs, and activities at the College; to answer preliminary questions about any and all facets of campus life; to assist students with their transition to a new environment by providing opportunities for them to meet other new students and begin forming new relationships important to their development as individuals; and to begin the development process of those academic, social, and personal skills necessary for a successful start to their collegiate careers at Fitchburg State.

The New Student Orientation Program is coordinated by the Student Affairs Office, and consists of two phases. During the summer, students are invited to participate in a one-day on-campus session for the purpose of academic advising and course registration, at which time, students meet with faculty from their respective departments for academic guidance prior to registration for fall classes. Then, just before the beginning of school, in late August or early September, new students are invited to return to campus for an intense three-day program entitled "Orientation: The Transition Begins."

"The Transition Begins" consists of a series of activities designed to give the new students a broad range of information, and to introduce them to campus life. Each student receives an information packet containing local maps, answers to frequently-asked questions, and information on campus activities. The students are taken on extensive campus tours in small groups, which affords them the opportunity to visit offices in operation, and to ask questions freely. Similiary, the students are given frequent opportunities to meet in small groups throughout the program to share information and experiences, and special-interest group meetings are held on such topics as study skills, adjustment to college life, the special needs of transfer students, and housing. Additionally, academic activities, like learning-preference testing and reading-skills evaluation, provide students with information about their scholastic abilities which will enable them to adjust more readily to their new environment.

In the evening, the focus is on entertainment, with a variety of social, recreational, and cultural events scheduled. The students take their meals in the Holmes Dining Commons and spend two nights in a college residential hall, giving them the chance to experience on-campus living, rounding out their orientation and providing them with a full perspective on the new world they are about to enter.

# *Registration*

# The Advisor

All undergraduates are assigned an advisor, a faculty member from the department of the student's major course of study; undeclared majors are assigned advisors on a temporary basis by the Undergraduate Dean. Students are encouraged to consult with their advisors at any time during the semester regarding any problem involving their academic program. By agreement, all faculty must be available to their students for class and other advising at least three hours a week. These hours are posted at the Department offices, and are also available through the Office of Academic Affairs. Moreover, students are required to meet with their advisors during the Registration Period, as only the advisor can arrange and approve course enrollment.

# Course Registration

In the weeks preceding registration, students should review their academic progress, discussing their status, performance, and plans for the upcoming semester with their advisor. They should contact the advisor to schedule an appointment for registration; then, on that day, both student and advisor will need to check the Seats Availability List updated and issued by the Registrar, to see whether the courses the student has selected are still open. If they are, the student will need to complete the OPSCAN Registration Sheet provided by the advisor; if they're not, advisor and advisee will need to consult further and decide upon alternative choices.

# Add/Drop Period

If a student has been "closed out" of a course (i.e., the seats were filled after the Seats Availability List was printed, but before the student's Registration Sheet was processed, or he or she was bumped from a course by another student who had priority due to major), the student may try to complete his or her schedule during the first two weeks of the semester—the add/drop period.

The student needs to get the permission of the instructors of the courses he or she wishes to add, and with each instructor, the student must complete an Add Card. The instructors routinely carry these on their persons during the add/drop period, and they will see that they are sent on to the Registrar's Office once they've been filled out.

Students wishing to drop a course for any reason follow a similar procedure using a Drop Card instead; students wishing to make multiple changes to their schedule may find using an Add/Drop Card more convenient in some circumstances.

# Course Overload

A course load surpassing eighteen semester hours is an overload, and as such, it must be approved by the Undergraduate Dean. Students petitioning for an overload must have a valid reason for carrying so many courses, and they must have the permission of both their advisor and the Undergraduate Dean to do so. Please note that students with a cummulative average lower than 3.0 will not usually be granted authorization to overload.

# Withdrawal from Courses

In the period between the third and eighth week of the semester, students may withdraw from courses and receive a "W" for a grade in each course withdrawn from. Course withdrawals are intitiated by the student, who is solely responsible for completing the necessary paperwork. The student must get the appropriate form from the Registrar's Office, and have it signed by the course instructor, his or her advisor, and, if he or she is dropping below twelve semester hours, the Undergraduate Dean. **N.B: Full-time enrollment status requires that the student carry a load of twelve or more credits. Dropping below this level, either by dropping or withdrawing from courses, jeopardizes the student's eligibility for V.A. benefits, Dean's List honors, scholarships, varsity athletics, health insurance coverage, and federal financial aid.**

Withdrawal from courses after the eighth week of the semester, unless documented extenuating circumstances are established, will result in a grade of 0.0 for the course.

# Withdrawal from the College

Students who leave the College, either during a semester or between semesters must complete a withdrawal form which may be obtained at the Office of Student Services, the Office of Academic Affairs, the Counseling Center, or the Advising Center. Students who withdraw within the first eight weeks of the semester will receive a "W" in each course; students who leave the College after eight weeks will receive a grade of 0.0 or "F" in all their courses.

# Return After Withdrawal

Students withdrawing from the College in good standing without completing a baccalaureate may return to the College upon request to the Registrar. To ensure their return at the time they desire, students should submit their requests to the Registrar before May 1st for the fall semester, or before November 1st for the spring semester.

In determining students' standing prior to their return to the College, the Registrar will consider academic, financial, and social (College Judicial Board) records before granting or denying permission.

# Return After Suspension

Students suspended from the College for academic reasons must remain away from the College for two semesters before requesting readmission. During this time, students may be required to retake courses which they failed, thereby raising their cummulative average to the minimum required for their class. The academic work completed in the interim is evaluated by the Registrar and the Undergraduate Dean prior to readmission.

A student who is suspended twice for academic deficiencies may not apply again for readmission.

# *Grades*

The following grades are assigned to students completing courses at the College: 4.0, which is excellent; 3.5, which is very good; 3.0, which is good; 2.5 and 2.0, which are average; 1.5 and 1.0, which are poor but passing; and 0.0, which is failing.

The student's cumulative average is derived by multiplying the grades earned in each course by the credits earned for that course and then dividing the number obtained by the sum of the credits attempted.

The student's cumulative average is the basis for his or her academic status, and it is involved in all honors and academic disciplinary considerations.

# Incomplete (INC)

In certain situations wherein a students has completed 80% of his or her course work, but is prevented by illness or an equivalent disability from finishing the course, the instructor may award a grade of Incomplete. Incomplete grades must be made-up by the close of the fourth week of the following semester; if not, a grade of 0.0 is automatically entered upon the student's permanent record. Incomplete grades are not considered in evaluations to determine the student's status. Grades which result from the make-up of an Incomplete will not change a probationary or dismissal status, nor will they count toward Dean's List or President's List status. They may, however, change financial aid or athletic eligibility status.

# Making Up Failed Courses

If a student earns a grade of 0.0 in a course, this failure should be made-up by the student. To do so, he or she may retake the course either at Fitchburg State or at another institution. If the course is retaken and passed at Fitchburg State, the grade replaces the 0.0 in calculations of the cumulative average; if the course is retaken and passed at another institution, the course requirement will be satisfied and the 0.0 removed, but the new grade will not be entered into cummulative average calculations. In each case, the original 0.0 remains on the record with a line drawn through it.

A grade of 1.0 or 1.5 is passing, and students may **not** retake courses in which they have received a passing grade.

# *Academic Status*

# GENERAL CORE OF STUDIES

## HUMANITIES

1. **Communication** (6 hours)

| | | | |
|---|---|---|---|
| English | EN | 101-102 | English Composition I & II |

2. **Intellectual & Moral Criticism** (6 hours — any distribution)

| | | | |
|---|---|---|---|
| Philosophy | PH | 101 | Introduction to Social & Political Philosophy |
| | PH | 102 | Introduction to Ethics |
| | PH | 104 | Great Philosophical Issues |
| | PH | 107 | Major Religions of the West |
| | PH | 108 | Major Religions of the East |
| | PH | 110 | Introduction to Philosophy of Science |
| Literature | EN | 213 | Major British Writers |
| | EN | 215 | Major American Writers |
| | EN | 221-222 | World Literature I & II |
| | EN | 228 | Shakespeare: Nine Plays |
| Language | LF | 101-102 | French I & II |
| | LF | 103-104 | French III & IV |
| | LG | 101-102 | German I & II |
| | LG | 103-104 | German III & IV |
| | LI | 101-102 | Italian I & II |
| | LI | 103-104 | Italian III & IV |
| | LL | 101 | Introduction to Study of Language |
| | LS | 101-104 | Spanish I & II, III, IV |
| | LS | 112-113 | Elementary Spanish for Social Services I & II |
| | LS | 114-115 | Intermediate Spanish for Social Services I & II |
| | LE | 101 | French Culture |
| | LE | 102 | German Culture |
| | LE | 103 | Italian Culture |
| | LE | 104 | Hispanic Culture |

3. **Appreciation of the Fine Arts** (6 hours — any distribution)

| | | | |
|---|---|---|---|
| Art | FA | 104 | Fundamentals of Art |
| | FA | 106-107 | Art Survey I & II |
| Music | MU | 101 | Music Appreciation |
| | MU | 102 | Basic Music Theory |
| | MU | 107 | Music in America |
| Drama | EN | 104 | Introduction to the Theatre |

## SOCIAL SCIENCE

1. **State and Local History** (3 hours — required by State Law)

| | | | |
|---|---|---|---|
| | HI | 103 | U.S. History and Government |
| | PL | 101 | American National Government |

2. **Social Understanding** (9 hours — not more than 6 in one area)

| | | | |
|---|---|---|---|
| Economics | EC | 101 | Principles of Macroeconomics |
| | EC | 102 | Principles of Microeconomics |
| Geography | GE | 101 | Principles of Geography |
| History | HI | 101 | Western Experience I |
| | HI | 102 | Western Experience II |
| | HI | 150 | History of Non-Western World |
| Political Science | PL | 101 | American National Government |
| | PL | 103 | State & Local Government |
| Psychology | PY | 101 | General Psychology |
| Sociology | SO | 101 | Principles of Sociology |

**ANALYTICAL SCIENCE** (9 hours — with at least one Natural Science and one in Mathematical Reasoning. In addition, one lab science required for graduation.

1. **Natural Science**

| | | | |
|---|---|---|---|
| Physical Science | PS | 101 | Physical Science |
| | PS | 104 | Geology |
| | PS | 107 | Introduction to Chemistry |
| | PS | 109-111 | General Chemistry I & II |
| | PS | 113 | Introduction to Physics |
| | PS | 115-117 | General Physics I & II |
| | PS | 119-121 | Physics I & II |
| | PS | 133-134 | Astronomy I & II |

| | | | |
|---|---|---|---|
| Geography | GE | 102 | Physical Geography |
| Biology | BI | 102 | Environmental Biology |
| | BI | 104 | Biology of Organisms |
| | BI | 106 | Inheritance & Development |

**2. Mathematical Reasoning**

| | | | |
|---|---|---|---|
| Mathematics | MA | 101-102 | Fundamental Concepts of Mathematics I & II |
| | MA | 103-104 | Pre-Calculus Mathematics I & II |
| | MA | 105-106 | Calculus I & II |
| | MA | 108 | Elementary Statistics |
| | MA | 109 | Finite Mathematics |
| | MA | 110 | Mathematical Explorations |
| | MA | 111 | Mathematical Applications |
| | MA | 113-114 | Mathematics for Science Majors I & II |
| | MA | 131-132 | Fundamental Concepts of Math I & II |
| Logic | PH | 103-106 | Symbolic Logic I & II |

A student is considered to be in good academic standing provided he or she is not on academic probation. Students are placed on academic probation if either their semester or overall cumulative grade point average falls below accepted levels for their class.

# Class Rank, Probation, and Dismissal

A student's class rank is determined by the number of credits which a student has successfully completed; therefore:

- Students who have completed less than thirty semester hours of course work are considered freshmen, and must maintain a grade point average of 1.6 in both their semester's work and in their overall cumulative average.
- Students who have completed between thirty and fifty-nine semester hours of course work are considered sophomores, and must maintain a grade point average of 1.8 in both their semester's work and in their overall cumulative average.
- Students who have completed between sixty and eighty-nine semester hours of course work are considered juniors. Students who have completed ninety or more semester hours of course work are considered seniors. Both juniors and senior must maintain a grade point average of 2.0 in both their semester's work and in their overall culumative average.

Students who fail to maintain these standards in their academic work for a single semester will be put on academic probation. Failure to do so for two successive semesters will result in the student being suspended from the College. Please note that making up failed courses during summer sessions or intersession does not remove a student from academic probation, suspension, or dismissal.

A student who fails one-half or more of the credits completed in one semester will be placed on academic probation, and must have the permission of the Undergraduate Dean to continue in the next semester.

Special consideration may be given to A.I.D. students by the Undergraduate Dean.

Students placed on term probation for the first time will remain eligible to hold office, to serve on campus committees, or to be a member of an athletic team provided their cumulative average is at least 2.0. This policy can only be applied once during a student's attendance at Fitchburg State College. Any subsequent probationary status will lead to ineligibility for the aforementioned activities. This policy does not change the academic policies governing probation, suspension, and dismissal. It deals only with eligibility under the circumstances cited above.

A student's financial aid will be continued during a probationary semester; however, a student must be maintaining satisfactory academic progress by the end of the probationary semester. (For further information, please consult the Financial Aid Office.)

# Honors

The President's List honors students for consistently high academic achievement. Students are named to the President's List when they have attained a semester average of 3.75 or higher for three successive semesters while maintaining full-time status.

Students who have attained an average of 3.2 or better for the semester while maintaining full-time status are placed on the Dean's List.

Graduation honors are noted in recognition of an outstanding academic career as signified by a high cumulative average. Students graduate with highest honor, *Summa Cum Laude,* if their cumulative average is 3.8 or higher. They graduate with high honor, *Magna Cum Laude,* if their cumulative average is 3.5 or higher, and with honor, *Cum Laude,* if their cumulative average is 3.2 or better. To graduate with honors, a student must have completed sixty credits at Fitchburg State College.

Each spring, outstanding students are recognized for excellence in their major field and overall scholastic achievement at the Spring Honors Convocation. The following awards are made:

Roger F. Holmes History Award

Outstanding Geography/Earth Science Senior

Geography/Earth Science Departmental Scholarships

Matti N. Antilla Poetry Award

Dr. William J. Goldman Award

Communications/Media Student of the Year

Cutler Award for All-Round Student

Purington Award for All-Round Craftsmanship

Kirkpatrick-Percival Award in Psychology

Human Services Award

Outstanding Academic Achievement Award in Sociology

Grainger Browning Award in Community Relations

Outstanding Senior in Biology

Outstanding Biology Secondary Education Award

Oustanding Senior in Medical Technology

John McNaney Memorial Award

Michael Vignale Memorial Award

R.O.T.C. Recognitions

The Grace Gummo Award

The Katherine Sehl Award

The Eleanor Voorhies Award

Christopher Hughes Memorial Scholarship

Hutchinson Award—Outstanding Student in Marketing

Outstanding Senior in Early Childhood Education

Outstanding Senior in Elementary Education

Outstanding Senior in Computer Science

Fitchburg State College Mathematics Award

Alumni Association Merit Scholarships

Mary F. Burnham Scholarships

The William Clark Memorial Scholarship

# Attendance

Each instructor has the perogative to place a value upon class attendance, subject only to the limitation that the members of each class be informed of that value early in the semester. The instructor's class attendance standard should be stated in the course syllabus. Where acceptable cause for absence can be substantiated, the student is required to produce appropriate documentation for the instructor's review.

In the event of inclement weather, the cancellation of classes will be reported on the following radio stations: WBZ, WEIM, WFGL, WTAG, WGAW, WEEI, WCMX, WFTQ, and WINQ.

# Academic Dishonesty

Academic dishonesty in all its forms, including cheating, fabrication, plagiarism, and facilitating academic dishonesty by aiding and abetting any of the aforementioned is not tolerated at Fitchburg State College. Violators will be subject to academic penalties from professors, and may have to come before the Judicial Board, an official body which hears cases involving violations of the Student Judicial Code.

# *Courses and Programs in the College*

For internal transfers between majors and from Undeclared into a major, departments and programs have individual requirements and procedures, including minimum grade point averages, formal application forms and designated admission dates. Access into some majors is also numerically limited. See the appropriate Department Chairperson for specific information about application for admission into a particular major.

## *Departments*

*Behavioral Science*
- Psychology
- Sociology
- Human Services

*Biology*
- Medical Technology

*Business Administration*

*Chemistry*

*Communications/Media*

*Computer Science*

*Early Childhood, Elementary and Secondary Education*

*English/Speech*

*Humanities*
- Art
- Foreign Languages
- Music
- Philosophy

*Industrial Techology*

*Mathematics*

*Medical Technology*

*Military Science*

*Nursing*

*Physical Education*

*Physics*

*Social Science*
- Economics
- Geography
- History
- Political Science

*Special Education*

## *Minors*

*Art*

*Biology*

*Business Administration*

*Chemistry*

*Computer Science*

*Economics*

**Elementary Education*

*English*

*Foreign Languages*
- French
- German
- Spanish

*Geography*

*History*
- European Emphasis
- American Emphasis

*Industrial Science*

*Interdisciplinary Graphics*

*Irish Studies*

*Mathematics*

*Music*

*Philosophy*

*Russian Studies*

*Secondary Education*

*Sociology*

*Theatre*

# Majors

## Biology
B.A. Biology
†Biology Education Program
*Certification only
B.S. Biology
Biology/Environmental Science
Biology/Exercise Science

## Business Administration
*B.S. Business Administration*
- Accounting
- Management
- Management Information Systems
- Marketing

## Chemistry
B.A. Chemistry
B.S. Chemistry

## Communications/Media
*B.S. Communications*
- Graphic Design
- Motion Picture Production
- Photography
- Technical Writing
- Non-Broadcast Television Prod.

## Computer Science
*B.S. Computer Science*

## Early Childhood Education
†Early Childhood Education Program
*Certification Only

## Economics

## Elementary Education
†Elementary Education Program
*Certification Program

## English
B.A. Literature
B.A. Professional Writing
†English Education Program
*Certification

## Geography
B.A. Geography
†Geography Education Program
*Certification
B.S. Geography
†Earth Science Education Program

## History
B.A. History
†History Education Program
*Certification Only
B.S. History

## Human Services
B.S. Human Services

## Industrial Arts/Technology Education
†Industrial Arts Education Program
*Certification

## Industrial Technology
*B.S. Industrial Technology*
- Construction Technology
- Electronics Engineering Technology
- Graphic Arts Technology
- Manufacturing Technology

## Mathematics
B.A. Mathematics
†Mathematics Education Program
*Certification
B.S. Mathematics

## Medical Technology
B.S. Medical Technology

## Nursing
B.S. Nursing

## Psychology
B.A. Psychology
B.S. Psychology

## Sociology
B.A. Sociology
B.S. Sociology

## Special Education
†*Special Education Program*
- Teacher of Children with Moderate Special Needs (Grades N-9)
- Teacher of Children with Moderate Special Needs (Grades 5-12)
- Teacher of Young Children with Special Needs (Ages 3-7)
- Teacher of Children with Severe Special Needs (Grades N-12)

*Certification
Vision

## Undeclared

*See Education Department regarding certification requirements.

†State regulations require a liberal arts or science major in addition to all professional education programs; students may **not** major in education programs. Applicants should list education programs as a minor interest. All Education programs are currently being revised.

# Art

Chairman: *Richard DeCesare*

Professor: *Donna Bechis*

Associate Professors: *Elmer Arsenault*, *Robert Fritz*

## *The Minor in Art*

The Minor in Art will require a minimum of 15 semester hours. Students should prepare their minor program in close consultation with an Art Advisor. Students will take Survey of Art Forms I or II, Basic Drawing, Design, Introductory Oil Painting and at least one course chosen from Three Dimensional Design, Advanced Painting, Sculpture, the Museum Internship or Art History.

*Asterisk indicates that the course is offered infrequently.

**AR 100** **3 cr. 3 hr.**
**Survey of Art Forms I**
A study of archecture, sculpture and painting from ancient Egyptian times to the Renaissance in Europe. Emphasis is placed on understanding style in these various art forms.

**AR 120** **3 cr. 3 hr.**
**Survey of Art Forms II**
A survey of significant styles in the architecture and painting of the Western World from the year 1800 to the present with emphasis upon the special nature of the visual experience.

**AR 140** **3 cr. 6 hr.**
**Drawing**
A studio course which introduces students to the practice of drawing with emphasis upon the description of form through means of line, shade and perspective. Investigation of a variety of media as well as basic stylistic alternatives is encouraged.

**AR 150** **3 cr. 6 hr.**
**Life Drawing**
The basic problems in form and anatomy are studied while drawing from the nude and costumed model. Various techniques and tools are explored including a study of some of the great masters' drawings.

**AR 160** **3 cr. 3 hr.**
**Design**
The basic elements of design will be applied to the creation of two- and three-dimensional form. Studio work will explore the effect of black and white, color and mixed media on form.

**AR 170** **3 cr. 3 hr.**
**Three Dimensional Design**
Three Dimensional Design concepts as they have been applied historically. Topics covered include form, space, structure, scale, line and color. Lectures, slides, film, and visual presentations included in course program.

**AR 180** **3 cr. 3 hr.**
**American Art**
A survey of significant stylistic developments in architecture painting and the decorative arts from the earliest colonial times to the present.

**AR 190** **3 cr. 3 hr.**
**Renaissance Painting**
The development of painting in Italy from 1250 to 1550, the age of Michelangelo. The Northern Europe Renaissance from 1400 to 1700 is also surveyed culminating in the Baroque period of Rembrandt.

**AR 200** **3 cr. 6 hr.**
**Introductory Painting**
A study of the basic problems of form, color, and texture as understood in oil paintings. Consideration is also given to the nature and use of the oil painting materials themselves.

**AR 210** **3 cr. 3 hr.**
**Contemporary Art**
Course will consist of active student participation in slide discussions, studio work, and museum trips. Subject matter will be based on contemporary trends in art dating from the 1960's to the present.

**AR 214** **3 cr. 4 hr.**
**Ceramics**
This course includes throwing on the wheel and glazing techniques with strong emphasis on different sculptural forms. (Credit will not be given for both IT 214 and AR 214.)

**AR 220** **3 cr. 6 hr.**
**Introduction to Sculpture**
This introductory studio course encourages students to explore their ideas and to transform them into sculpture. Students combine creativity, exciting materials, and basic sculpture techniques to create unique works of art.

***AR 240** **3 cr. 6 hr.**
**Advanced Sculpture**
This studio course is an expansion upon the basic principles of sculpture, on a more advanced level. Sculpture projects will be geared toward the individual interests and requirements of the advanced student. AR 220 is a prerequisite.

**AR 250** **3 cr. 6 hr.**
**Advanced Painting**
Accent is placed on the painting of the portrait. Anatomical and formal construction is studied and consideration is given to painterly values of color and texture.

***AR 270** **3 cr. 6 hr.**
**Pictorial Design**
This course continues where Advanced Painting ends. Emphasis is given to figure painting, both costumed and nude model. The total figure is studed anatomically and in terms of basic forms. Continued study of color and texture problems.

**AR 280** **3 cr. 3 hr**
**Art in Elementary School**
Practice of art as well as observation and discussion of the philosophy of art education in the elementary grades.

***AR 300** **3 cr. 6 hr.**
**Museum Internship**
Offered jointly with the Fitchburg Art Museum. Emphasis on museum management and particularly the arrangement of exhibitions. Only by permission of advising art faculty. Two art courses, at least one in art history, are prerequisites.

**AR 425** **3 cr. 4 hr.**
**Crayonstone Lithography**
Students print and prepare their stones, develop and transfer their illustrations to the stones, draw and shade on their stones and print their illustrations. (Credit will not be awarded for IT 279 and AR 425.)

**AR 490** **3 S.H.**
**Independent Study in Art**
For selected students, upon approval of both department head and advising instructor.

**AR 493** **3 cr. 3 hr.**
**Topics in Art**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under this title.

# Biology

Chairman:
*Stanley Dick*

Professors:
*Neal Anderson*
*George Babich*
*George Bond*
*Stanley Dick*
*Stanley Krane*
*Rose Marie Neunherz*
*Donald Schmidt*
*Robert Zottoli*

Assoc. Professors:
*Howard Thomas*
*Alice O'Malley*

Asst. Professors:
*Benamin Andrusaitis*
*Edward Armstrong*

Instructors
*Elizabeth Szymczak*
*Christine Vandreuil*
*Dorothy Boisvert*

The Biology Department has a dual mission: 1) to provide undergraduate training in the biological sciences for our majors and minors; 2) to provide a variety of service courses for specific major programs as well as the college at large. As a consequence of this dual function, the Biology Department aims to provide quality service courses for all non-majors choosing one or more of our courses as well as a nucleus of fundamentals which build and expand in a variety of directions for their major in Biology.

Students which qualify for admission to the College are eligible to become majors in the Biology Department. In addition, students must maintain college-wide accepted quality point averages throughout their degree program in order to remain as a major in our department.

**B.S. and B.A. in Biology**
All students in either the Bachelor of Science or Bachelor of Arts programs in Biology are offered a required core sequence of the following courses:

BI 140 General Botany
BI 160 General Zoology
BI 230 Ecology
BI 280 Genetics
BI 430 Cell Biology
BI 400 Developmental Biology

Twelve semester hours of additional biology electives at or above the 200 level are required of biology majors. the course numbers (100-400) reflect the year in which one would normally take the course. They may be chosen in an area of specialization. These specializations can be developed, in consultation with a faculty advisor, into individualized informal academic career tracks.

The B.S. and B.A. in Biology degrees both require the following additional courses in related sciences:

CH 110/CH 120
General Chemistry I and II
CH 200/CH 210
Organic Chemistry I and II
PH 130/PH 140
General Physics I and II

Two courses in mathematics at or above the level of MA 130, Elementary Functions.

The B.A. in Biology, in addition to all the above requirements, requires foreign language proficiency at the second year college level.

## *B.S. in Biology/Minor in Secondary Education*

The Bachelor of Science in Biology with a minor in Secondary Education can be obtained by fulfilling all the requirements for the B.S. in Biology plus the following additional professional courses:

BI 485 Biology Teaching Methods or ED 485 Special Methods in Secondary Education
BI 486, 487
Biology Student Teaching
(12 semester hours)
PY 110/230
General Psychology/Adolescent Psychology
PY 275
Tests and Measurements
EN 470
Teaching Writing to Secondary Students
ED 301
Successful Practices in Secondary Education

## *B.S. in Biology/ Environmental Science*

The Bachelor of Science in Biology/Environmental Science includes all requirements of the B.S. in Biology. Additional requirements are:

ES 100
Seminar in Environmental Science
ES 480
Internship in Environmental Science

Three semester hours of electives in Environmental Science
Six semester hours of Earth Science or Geology
Three semester hours in Computer Science

For Specialists in Environmental Science, the Department recommends that the General Education social sciences requirement be partially fulfilled by courses in Geography, Macroeconomics, Environmental Law and Urban Planning; and that courses in Photography, Drawing, Ethics, and Technical Writing be used to fulfill the General Education humanities requirement.

## *B.S. in Biology/Exercise and Sport Science (see Physical Education)*

Exercise Science Course Requirements
(12 s.h.)
PE 412
Biomechanics of Sport
PE 404
Behavioral Concepts of Sport
PE 307
Exercise and Sport Science
BI 495
Internship

## *A Minor in Biology*

The minor in Biology will provide a means by which students can include and demonstrate in their academic record evidence of a substantial and coordinated subsidiary expertise in biological sciences.

The minor in Biology requires a minimum of 18 semester hours of course work in the area distributed as follows:

A. One year (6 semester hours) of entry-level Biology sequences:

BI 100/BI 110
Life Science I and II, or
BI 120/BI 130
Anatomy and Physiology I and II, or
BI 140/BI 160
General Botany and General Zoology

C. Nine semester hours of 200-, 300-, or 400-level courses selected after consultation with a minors advisor in the Biology Department.

Asterisk indicates that the course is offered infrequently.

**BI 100** **3 cr. 4 hr.**
**Introduction to Life Science I**
The course focuses on the history, philosophy and content of biology as a science. Laboratory work includes experiences that emphasize problem solving by the student. Primarily for the non-major. 2 hrs. lecture, 2 hrs. lab per week. Offered: Fall semester.

**BI 110** **3 cr. 4 hr.**
**Introduction to Life Science II**
Continuation of BI 100. 2 hrs. lecture, 2 hrs. lab per week. Offered: Spring semester.

**BI 120** **3 cr. 4 hr.**
**Anatomy and Physiology I**
Structure and function of the human organism on the cellular, tissue, organ, and system levels. Cellular metabolism, histology and the following systems: skeletal, muscular, and nervous (including the special senses). The laboratory emphasizes both physiology and the dissection of preserved mammalian specimens. 2 hrs. lecture, 2 hrs. lab per week. Offered: Fall semester. (Not open to students who have completed BI 170, Human Biology or BI 242, Human Physiology)

**BI 130** **3 cr. 4 hr.**
A continuation of BI 120. The following systems are covered: circulatory, breathing, digestive, excretory, endocrine and reproductive. 2 hrs. lecture, 2 hrs. lab per week.
*Offered: Spring semester.*
*Prerequisite: BI 120. (Not open to students who have completed BI 170, Human Biology or BI 242, Human Physiology)*

**BI 140** **3 cr. 4 hr.**
**General Botany**
The structure, physiology and life cycles of the algae, fungi, bryophytes, ferns, gymnosperms, and angiosperms. Relationship of plant biology to agriculture and medicine is also discussed. Laboratory involves study of live and preserved plant materials, simple physiological experiments and a plant growth project. 2 hrs. lecture, 2 hrs. lab per week.

**BI 150** **1 cr. 1 hr.**
**Seminar in Modern Biology**
Discussion of current topics in basic and applied biological research based on readings of original scientific reports. Each student is expected to prepare one brief presentation on a topic of his or her choice.

**BI 160** **3 cr. 4 hr.**
**General Zoology**
A course designed to acquaint students with basic zoological concepts. Emphasis will be placed on such topics as: scientific method; cell structure and function, structure and function of tissues, organs and organ systems; evolution; and a general survey of the principle phyla of the animal kingdom. 4 hrs. lecture, laboratory, field trips per week.

**BI 165** **3 cr. 3 hr.**
**Nutrition**
Examination of nutrients in foods and their metabolic role in normal nutrition. Emphasis will be on energy sources and utilization, vitamins and minerals, nutritional requirements in relation to the changing demands of life, and the effect of food handling and processing on the nutrient content of food. Lectures, discussions and personal nutrition projects.

**BI 170** **3 cr. 3 hr.**
**Human Biology**
Anatomy and physiology of the cells, tissues, organs and organ systems of the human organism and their functional interrelationships. 3 hrs. of lecture, lab, demonstration. (Not open to students who have completed BI 120 130).

**BI 181** **3 cr. 4 hr.**
**Science in Elementary Education**
Content, methods, and resources suggested by curriculum groups are examined and experiences developed that exemplify current thinking in science education. Recommended only for majors in Education.

**BI 230** **3 cr. 4 hr.**
**Introductory Ecology**
Survey of major ecological concepts and methodology as a basis for further investigations of the dynamic relationship between organisms and their environment. Field and laboratory work emphasize problem identification, formulation of hypothesis, data collection, and analysis and interpretation of results in terms of their biological implications. 2 hrs. lecture, 2 hrs. lab field trips per week. Offered: Fall semester.
*Prerequisite: BI 100 or 140 or 160 or permission of instructor.*

***BI 240** **3 cr. 3 hr.**
**Environmental Health**
Investigations into that aspect of public health that concerns itself with forms of life, chemical substances, environmental conditions and other forces in the surroundings of man that exert an influence on his health and well-being. 3 hrs. of lecture/discussion and occasional field trips.
*Prerequisite: BI 110 or equivalent or permission of instructor*

**BI 242** **3 cr. 3 hr.**
**Human Physiology**
Intensive study of the structural organization and functional operation of the human organ systems and the interrelationships of these

systems. (Intended for students who are majoring in Biology or Medical Technology. Not open to students who have completed BI 120 and BI 130.

***BI 250** **3 cr. 4 hr.**
**Histology**
Systematic survey of the basic animal cell and tissue types, followed by in-depth microscopic study of the major organ systems. Practical work includes histological microtechnique on normal and pathological specimens. Lecture, lab, demonstration, plus some additional time. Offered: Alternate years.
*Prerequisite: BI 160 or BI 170 or BI 242 or BI 120/130.*

***BI 255** **3 cr. 3 hr.**
**Social Biology**
An exploration of the biological and cultural evolution of man and how that evolution has developed or caused specific societal problems. A study of the biological explanations for and possible solutions of these problems. 3 hrs. of discussion per week, 1 hr. independent study. Offered: Alternate years.
*Prerequisite: 6 semester hours of Introductory Biology or equivalent.*

**BI 270** **3 cr. 4 hr.**
**Survey of Micro-organisms**
Introduction to the biology of major groups of microorganisms: bacteria, viruses, protozoa and fungi, their role in nature and their relationship to man as agents of infectious diseases. Laboratory emphasizes principles and practices of aseptic techniques and diagnostic identification and culture of disease entities. 2 hrs. lecture, 2 hrs. lab per week, plus some additional time. Offered: Spring semester.
*Prerequisites: BI 130 and Introductory Chemistry or permission of Instructor.*

**BI 280** **3 cr. 4 hr.**
**Genetics**
Basic principles of biological information processing: Mendelian inheritance; sex determination; chromosome cytogenetics; linkage, recombination and genetic mapping; mutagenesis; molecular genetics and gene-enzyme relationships; quantitative inheritance. Laboratory work includes study of mutational effects and analysis.

***BI 290** **3 cr. 4 hr.**
**Marine Biology**
Investigation of the distribution of the dominant animals and plants in a salt marsh, sand beach, tide pool, and rocky intertidal area. Data on physical and chemical factors of these habitats will be correlated with the composition, behavior and physiology of the flora and fauna of each habitat. 4 hrs. of lecture/ lab/field work per week, plus some additional hours. Offered: Fall semester (alternate years).
*Prerequisites: BI 140, BI 160 and permission of Instructor.*

***BI 300** **3 cr. 4 hr.**
**Parasitology**
The morphology and diagnostic identification of representative groups of parasitic protozoa, helminths and arthropods, and their functional life cycle and pathogenic relationships to animal and human hosts. Epidemiology, pathology and control and treatment of important parasitic diseases. 2 hrs. lecture, 2 hrs. lab per week. Offered: (alternate years).
*Prerequisite: BI 160.*

***BI 310** **3 cr. 4 hr.**
**Ornithology**
An inquiry into the life of birds. Emphasis is on correlation of structure, function and behavior. Laboratory studies of external characters, anatomy and criteria for identification. Optional field trips. 2 hrs. lecture, 2 hrs. lab per week. Offered: Spring semester (alternate years). Prequisite: BI 110 or BI 160 or permission of Instructor.

***BI 315** **3 cr. 4 hr.**
**Ichthyology**
The study of the classification, ecology and physiology of the fish common to Massachusetts. Both marine and freshwater species will be covered, with field collecting trips planned. Class time will be divided between lecture and laboratory work. Offered: Fall semester (alternate years).
*Prerequisite: BI 160 and BI 230, or permission of Instructor.*

***BI 320** **3 cr. 4 hr.**
**Plant Physiology**
Individually paced integration of plant structure and function emphasizing physiology of the integrated plant water relations, transpiration and translocation, mineral nutrition, photosynthesis, respiration, growth hormones, differentiation and morphogenesis. 2 hrs of conference, 2 hrs. lab per week, plus additional hours. Offered: Fall semester (alternate years).
*Prerequisites: BI 140 and General Chemistry.*

**BI 325** **3 cr. 4 hr.**
**Cell Biology**
Cell and subcellular structure and function. Membranes, cell organelles, bioenergetics,

photosynthesis, DNA and RNA structure, function and replication, protein synthesis and gene regulation are the major areas considered. Laboratory includes absorption spectrophotometry, cell fractionation, organelle isolation, DNA isolation and denaturation. 2 hrs. lecture, 2 hrs. lab per week.

***BI 330** **3 cr. 4 hr.**
**Entomology**
Anatomy, habits, life histories and identification of insects and some related anthropods. Laboratory work includes preparation of a representative collection of adult and larval forms from terrestrial and aquatic environments with emphasis on techniques for identification of these forms. 4 hrs. lecture/laboratory, plus additional hours for field trips and identification. Offered: Fall semester (alternate years).
*Prerequisite: BI 160 or permission of Instructor.*

***BI 340** **3 cr. 4 hr.**
**Limnology**
A study of fresh waters and their inhabitants: survey of protists, invertebrates, vertebrates and plants collected from local waters and their ecological interrelationships as determined by biological, physical and chemical parameters. 1 hr. lecture, 3 hrs. lab/field trips per week. Offered: Fall semester (alternate years).
*Prerequisites: BI 140 and BI 230 or permission of Instructor.*

**BI 345** **4 cr. 6 hr.**
**Biochemistry**
Individually paced, mastery-oriented introduction to the chemistry of biologically important molecules and their metabolism and regulation; water, proteins, lipids, carbohydrates, nucleic acids and their components. Laboratory emphasizes manual and instrumentated techniques for isolation, qualitative and quantitative analysis of macromolecules and the kinetics and induction of enzumes. 2-4 hrs. lecture/conference, 3 hrs. lab per week. Offered: Fall semester.
*Prerequisite: Organic Chemistry*

***BI 350** **3 cr. 5 hr.**
**Plant Taxonomy**
Classification of higher plants in accordance with evolutionary principles and trends. Laboratory is devoted to the techniques of plant identification with emphasis on the terminology and use of botanical keys. Field trips for collecting representative elements of the local flora and preparation of an herbarium. 1 hr. lecture, 4 hrs. lab per week, plus some independent project work. Offered: Fall semester (alternate years).
*Prerequisite: BI 140 or permission of Instructor.*

**BI 355** **3 cr. 4 hr.**
**Developmental Biology**
A detailed description of developing embryos from the fertilized egg through the various stages leading to the adult organism. Current theories regarding the molecular mechanisms underlying cell differentiation and other classic developmental processes is also a major theme of this course. Other topics include regeneration, metamorphosis, aging and cancer. Laboratory involves study of development in live sea urchins, birds, frogs and ferns as well as work with prepared slides. 2 hrs. lecture, 2 hrs. lab per week. Offered: Spring semester.
*Prerequisites: BI 140, BI 160, BI 280, or permission of Instructor.*

***BI 360** **3 cr. 4 hr.**
**Biology of Algae**
Collection and identification of common algae found in the New England area. Emphasis on freshwater forms, but some study of marine algae as well. Distribution of algal species will be correlated with physical and chemical factors in their habitats. Laboratory will include study of algal physiology and reproduction as well as techniques for cultivation. 1 hr. lecture, 3 hrs. lab/field trips per week.
*Prerequisite: BI 140.*

***BI 370** **3 cr. 4 hr.**
**Mammalogy**
A study of the biology of mammals with emphasis on New England species. Laboratory work will include identification and preparation of small mammal study skins. Field trips will be made to capture and study animals in the field and to visit museums for access to study collections and habitat groupings of the larger mammals unlikely to be seen in the wild. 4 hrs. lecture/laboratory plus additional hours for field trips. Offered: Spring semester (alternate years).
*Prerequisite: BI 160 or permission of Instructor.*

**BI 390** **4 cr. 6 hr.**
**General Microbiology**
Structure, nutrition and growth of bacteria, characterization of representative bacteria, fungi, viruses and protozoa and their genetic and metabolic peculiarities immunological techniques and the immune response in man.

Laboratory work includes aseptic technique, isolation and cultivation of microbes, staining techniques and diagnostic metabolic reactions. 3 hrs. lecture, 3 hrs. lab per week, plus additional time.
*Offered: Fall semester.*
*Prerequisites: Organic Chemistry and Genetics or permission of instructor.*

***BI 425** **3 cr. 3 hr.**
**Endocrinology**
A study of chemical integration of physiological processes by hormones and related agents. Discussions include structure and function of vertebrate and other animal endocrine systems; neuroendocrine relationships; and other topics of current interest. 3 hrs. lecture, demonstration. Offered: Alternate years.
*Prerequisites: BI 160 and BI 120, 130 or BI 170 or BI 242, or permission of Instructor.*

***BI 450** **4 cr. 6 hr.**
**Molecular Biology**
An advanced course dealing with restriction nenzumes, plasmids, recombinant DNA, sequencing of DNA, oncogenes, and other topics of current interest in molecular biology. Laboratory work consists of gel electrophoresis analysis of restriction enzyme digest, and gene cloning experiemnts.
*Prerequisites: BI 280; and BI 325 and BI 345*

***BI 460** **3 cr. 3 hr.**
**Evolution**
An introduction of the principles and processes governing the evolution of living organisms. Emphasis will be placed on the ways by which the various other biological disciplines relate to evolutionary studies. A survey of paleontological evidence will be given to demonstrate how evolutionary principles have affected life. 3 hours of lecture per week.
*Prerequisites: BI 140, 160, 230, and 280 or permission of instructor. Offered: Alternate years.*

***BI 480** **3 cr. 3 hr.**
**Neurobiology**
Neural activity and the neural bases of behavior as illustrated by simpler invertebrate and vertebrate nervous systems. Topics will also include: structure and function of neurons, neurodevelopment, cellular basis of behavior (sensory and motor systems), neuropharmacology, neural plasticity. Lectures/demonstrations.
*Prerequisite: one year of Animal Biology and one year of Chemistry, or permission of Instructor.*

***BI 481** **3 cr. 3 hr.**
**Immunology**
A survey of the immune response, antibody formation and function, immunosuppression, blood group antigens and antibody-antigen reactions. The principles of complement activity, hypersensitivity and autoallergic reactions. Lectures/ demonstrations. Offered: Spring semester.
*Prerequisites: BI 390 and Organic Chemistry.*

**BI 485** **3 cr. 3 hr.**
**Biology Teaching Methods**
Methods and philosophical background for teaching of modern biological science. (This course is a prerequisite for student teaching and should be taken the semester prior to student teaching: consult Screening Policies for Student Teachers for other requirements for student teaching.) 1 hr. public school assisting, 1 hr. discussion, 1 hr. independent study per week. Offered: Fall semester.
*Prerequisites: junior or senior standing, ED 301, PY 223 and permission of Instructor.*

**BI 486** **6 hr.**
**Student Teaching in Biology I**
Student Teaching Practicum in Biology. Students are assigned to cooperating schools for a semester of student teaching.

**BI 487** **6 cr.**
**Student Teaching in Biology II**
Student Teaching Practicum in Biology. Students are assigned to cooperating schools for a semester of student teaching.

**BI 490** **1 to 3 credits**
**Independent Study**
Laboratory or other independent research under the guidance and supervision of one or more faculty members. A comprehensive term paper is required for successful completion of the project. Offered: Fall and Spring semesters. May be repeated for credit to a maximum of 9 semester hours.
*Prerequisites: junior or senior standing, 15 credits of Biology and special permission of the Departmental Curriculum Committee.*

**BI 493** **3 cr. 3 hr.**
**Topics in Biology**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under this title.

**BI 494, 495, 496** **3, 6, 12 cr.**
**Internship**
Laboratory or field experience in conjunction with established research programs at cooperating off-campus governmental, industrial or private foundations. Supervision

is shared by program directors and faculty members at Fitchburg State College. Assignments, contingent upon students abilities and acceptance by the cooperating institution, involve one or two full days of work per week. May be repeated for credit to a maximum of 12 semester hours. A comprehensive term paper is required after each semester of internship work for successful completion of the project. *Prerequisites: senior standing and approval of the Biology Department.*

# Business Administration

Chairperson: *George Murphy*

Professor: *George Murphy*

Asst. Professors:

*Diane Caggiano*
*Sylvia Charland*
*David Carey*
*James Conlin*
*Martin Cusack*
*Robert Kelleher*
*Joseph McAloon*
*John McKeon*
*Francis Morrison*
*James Noonan*
*Harold Schonbeck*
*Gary Vostok*
*Charles Wellens*
*Barry Wolfson*

Assoc. Professor: *John Boursy*

## *Introduction*

**Aims and Objectives**
The objectives of the Business Administration Department are to prepare each student to take a responsible position within the world of business equipped with a knowledge of business theories, policies, and procedures. The program also develops and refines a commitment to human values and moral excellence as well as professional competence. These objectives are accomplished through a curriculum which is based in the liberal arts, coupled with a sufficient mix of professional courses and a variety of "hands-on" business experience.

**Admissions and Retention**
Admission to the Business Administration Department is competitive. The applicants who are best prepared for admission will have completed a college preparatory program in high school. It is advisable that students have successfully completed four years of mathematics through pre-calculus.

## *The Major*

**Degrees Offered**
The degree offered by the Business Administration Department is the Bachelor of Science degree.

**Concentrations/Options**
The Business Administration Program at Fitchburg State College includes concentrations in either of four areas of business: accounting, management, marketing, or management information systems.

## *Core Curriculum*

Principles of Accounting I and II, Business Law I, Basic Finance, Principles or Management, Fundamentals of Marketing, Economics I and II, Introduction to Business Data Processing, Business Calculus, Business Statistics.

The courses beyond the core curriculum are open only to Business Administration majors. These upper-level courses are not transferrable from another College if they are required within a students concentration.

## *Accounting Curriculum*

Intermediate Accounting I and II, Business Law II, Cost Accounting I and II, Tax Accounting, Auditing, Advanced Accounting I and II, Financial Management of Corporations.

## *Management Curriculum*

Production Management, Personnel Management, Business Fluctuations and Forecasting, Organizational Behavior and Theory, Social and Political Environment of Business, Business Policy and Strategy, and Managerial Accounting.

## *Management Information Systems Curriculum*

Introduction to Business Data Processing, Systems Analysis Methods, Structuredl Systems Analysis and Design, Computer Concepts and Programming Techniques, DataBase Management Systems, Applied Software Development, Managerial Accounting, Business Policy and Strategy, and Organizational Behavior and Theory.

## *Marketing Curriculum*

Advertising, Consumer Behavior, Market Research, Managerial Accounting, Business Policy and Strategy, and three marketing electives.

## *Internships/Practica*

**Business Administration Internship**
The Business Administration Department offers its students the opportunity for experiential learning through its Internship Program. The internship is a one-semester experience that occurs in either the second semester of the Junior year or the first semester of the Senior year. Students are placed on jobs that relate to their area of concentration. While the student is working at a host company, he/she earns a full semester of credit. In addition to working at the host company, the student is required to attend an internship seminar on campus once every two weeks. In order to participate in the Internship Program a student must have a 3.0 average in business courses and a minimum of 2.5 overall cumulative average.

The Intership Program is structured to give the participant an opportunity to apply the theory of the classroom to a "real world" experience. The Internship Program enhances the students' total college experience.

## *The Minor*

**The Minor in Business Administration**
The minor in Business Administration consists of eighteen credits. The following four courses are required: Accounting I, Business Law I, Principles of Management, Fundamentals of Marketing and two business electives.

Two of the four required courses may be transferred from another college.
Students minoring in Business Administration may take a maximum of two upper-level courses. These courses must be taken at Fitchburg State College and they must be approved by the Department Chairperson.

## *Special Information*

The Montachusett Economic Center (MEC), started at Fitchburg State College by President Vincent J. Mara in 1981, employs college students and professors to provide management and marketing assistance to a wide variety of local business and organizations. These endeavors take the form of marketing research projects, management and marketing audits, small business assistance, seminars, on-line database searching, technology transfer, and other demographic and economic studies.

## *Course Descriptions*

**BA 110** **3 cr. 3 hr.**
**Principles of Accounting I**
This course examines basic accounting theory and its application. The course includes the accounting equation; journalizing, posting and trial balance; adjusting and closing procedures; preparation of financial statements; use of special journals, receivables and payables; merchandise inventory; accounting systems and processes.

**BA 111** **3 cr. 3 hr.**
**Principles of Accounting II**
This course deals with the more complex forms of business: partnerships and corporations; capital stock and bonds; retained earnings; income taxes and cost analysis.
*Prerequisite: BA 110.*

**BA 210** **3 cr. 4 hr.**
**Intermediate Accounting I**
In this course emphasis is placed on the application of accounting theory to practice problems in order to develop financial statements of proper form and content. The relationship between various financial statements is constantly reaffirmed. Asset items of the balance sheet are treated comprehensively.
*Prerequisites: BA 111, BA 220, BA 230 and BA 240.*

**BA 211** **3 cr. 4 hr.**
**Intermediate Accounting II**
Liabilities, reserves, funds and stockholders equity items are thoroughly treated. In addition, other topics are covered.
*Prerequisite: BA 210.*

**BA 220** **3 cr. 3 hr.**
**Principles of Management**
This is an introductory course in basic management concepts and practices. This course covers principles and techniques as they relate to planning, organizing, leading and controlling business enterprises.

**BA 230** **3 cr. 3 hr.**
**Fundamentals of Marketing**
This course discusses the role of marketing in our economic and social structure. It includes the planning, distribution, pricing and promotion of goods and services to consumer

and industrial markets, viewed as internal activities of the firm, and as shaped by environmental forces.

**BA 240** **3 cr. 3 hr.**
**Basic Finance**
This course studies the forms and sources of financing business firms, large and small, corporate and noncorporate. The emphasis is on financial planning and developing judgment in formulating decisions on financial problems.
*Prerequisite: BA 110.*

**BA 250** **3 cr. 3 hr.**
**Business Law I**
This course is an introduction to the study of business law, its nature and classification, the court systems and their procedures. Contract law, the law of sales and personal property are comprehensively dealt with.

**BA 251** **3 cr. 3 hr.**
**Business Law II**
This course is a continuation of Introduction to Business Law and deals with the law of agency, commercial paper, credit, and the various forms of business.
*Prerequisite: BA 250*

***BA 260** **3 cr. 3 hr.**
**Labor Relations and Collective Bargaining I (Private Sector)**
An in-depth study of fundamental labor-relations issues: the development of federal labor policy; union organization and union organizing; collective labor-contract negotiation; contract enforcement and the use of strikes and lockouts, boycotts and picketing, and multiemployer bargaining; arbitration and grievance procedure; health, welfare, and safety concerns; equal employment opportunity; labor economics; and state and federal labor legislation, and the role of government in labor disputes.
*Prerequisite: BA 321*

***BA 261** **3 cr. 3 hr.**
**Labor Relations and Collective Bargaining II (Public Sector)**
A continuation of BA 260. A significant part of the second semester will consider public sector collective bargaining and organizing (local, state, and national, and within healthcare organizations).
*Prerequisite: BA 260.*

***BA 262** **3 cr. 3 hr.**
**Labor and Management Relations**
This course involves an investigation of the American Labor movement. It is an analytical account of what labor is, why it behaves the way it does, and how it is managed. The course will also cover the various organizational forms and models of labor unions.

**BA 270** **3 cr. 4 hr.**
**Introduction to Business Data Processing**
An overview of Computer Information Systems, this course surveys computer hardware, software, systems and personnel and examines the integration of these components in a commercial environment. A hands-on introduction to computer problem solving using the basic programming language is provided.

**BA 271** **3 cr. 4 hr.**
**Systems Analysis Methods**
An overview of the systems development life cycle, this course introduces the student to the fundamental concepts and techniques of systems analysis and design. Classical and structured methods of systems documentation are explored as well as information gathering and reporting activities. Finally the transition from systems analysis to design is discussed.
*Prerequisite: CS 180*

**BA 280** **3 cr. 3 hr.**
**Business Problem Solving with BASIC**
This course will use the BASIC programming language to solve business problems. Structural programming techniques and advanced features of BASIC including multidimensional arrays and file handling statements will be used to develop medium scope business application systems.

**BA 312** **3 cr. 3 hr.**
**Cost Accounting I**
The control aspects of material, labor, and overhead accounting are stressed. The course covers various cost accounting systems and profit planning.
*Prerequisite: BA 111*

**BA 313** **3 cr. 3 hr.**
**Cost Accounting II**
This course covers planning of profits, costs, and sales through the use of budgets, cost behavior analysis and cash forecasts. The course introduces direct costing, standard costing and conventional gross profit analysis. It emphasizes the uses of cost accounting data for policy making and decision making purposes through breakeven analysis, capital budgeting, differential and comparative cost analysis.
*Prerequisite: BA 312*

**BA 314** **3 cr. 3 hr.**
**Managerial Accounting**
This course stresses the usefulness of accounting data as it relates to the managerial decision-making process. Computer applications are integrated with the broad objectives relative to planning, control, and analysis. Among the multifaceted areas of study are financial statement analysis, budgeting standard cost analysis, and capital expenditure planning and control.
*Prerequisite: BA 111, BA 220, BA 230, and BA 250*

**BA 320** **3 cr. 3 hr.**
**Production Management**
The basic principles of production management related to the effective utilization of the factors of production in manufacturing and non-manufacturing activities for both intermittent and continuous systems are discussed. The course will also study production organizations, analytical models and methods, facilities design, and the design of control systems for production operations.
*Prerequisite: BA 220*

**BA 321** **3 cr. 3 hr.**
**Human Resources Management**
This is an introductory course which surveys human resources practices and procedures involved with recruiting, employment, training & development, job evaluation, compensation, health & safety, labor relations, and workplace law. Special topics of student interest will also be covered.
*Prerequisite: BA 220*

**BA 322** **3 cr. 3 hr.**
**Business Fluctuations and Forecasting**
This course is an analysis of the operations of our free enterprise system with emphasis on the factors responsible for economic instability; analysis of public and business policies which are necessary as a result of business fluctuations.
*Prerequisite: EC 120 and MA 280*

**BA 330** **3 cr. 3 hr.**
**Advertising**
Topics in this course will include the functions of advertising, planning and advertising campaign copy, artwork and media selection. Students will become knowledgeable about the preparation and use of advertising.
*Prerequisite: BA 230, BA 111, BA 220, BA 250*

**BA 331** **3 cr. 3 hr.**
**Consumer Behavior**
This course will familiarize the student with the consumer decision-making processes. It will utilize the concepts of the social and behavioral sciences in order to provide an understanding of consumer buying behavior.
*Prerequisite: BA 230, BA 111, BA 220 and BA 250.*

**BA 332** **3 cr. 3 hr.**
**Market Research**
This course will emphasize the importance of research in marketing planning and decision making. It will include the basics of scientific investigation, the search for information, sampling, data collection, data analysis, interpretation and reporting.
*Prerequisite: BA 230, BA 111, BA 220, BA 250 and MA 280.*

**BA 341** **3 cr. 3 hr.**
**Investments**
An analysis of stocks, corporate and governmental bonds and other investment media and a study of the secondary stock market mechanism. This course will review various investment vehicles and security evolution. Research of individual companies and industries will be required. Course will be primarily lecture and problem solving.
*Prerequisite: BA 111, BA 220, BA 230, BA 240 and BA 250*

**BA 342** **3 cr. 3 hr.**
**Real Estate Investment & Management**
The investment, financing and management of real estate with a particular emphasis toward business decision. This course will focus on real estate as an investment good. Its popularity as an investment vehicle can be attributed to a number of income-producing characteristics of which the following are noteworthy: Emphasis on 1) cash flow, 2) changing property values, 3) equity investor, 4) decision-making, 5) risk and return and 6) market research.
*Prerequisite: BA 111, BA 220, BA 230, BA 240 and BA 250.*

***BA 363** **3 cr. 3 hr.**
**Collective Bargaining Methods**
After a discussion of strategies and tactics used in labor negotiations, this course will evolve from simulated contract negotiations. It will give the student first hand knowledge of what goes on at the bargaining table.
*Prerequisite: BA 220, BA 260 and BA 321.*

***BA 364** **3 cr. 3 hr.**
**Labor Organization and Trade Unionism**
This course will provide the student with the knowledge of how unions are organized and

operate in the nation. It will include a presentation of the development of craft and industrial unions, the anatomy of local and national labor organizations and of union organizing, and an analysis of the political and economic position of labor unions in the country today.
*Prerequisite: BA 111, BA 220, BA 230, and BA 250*

**BA 370** **3 cr. 3 hr.**
**Structured Systems Analysis and Design**
This course covers the methodology of structured systems development concentrating on the analysis and design phases of the system development cycle. A case approach to advanced concepts, it is a course in problem solving wherein the student learns strategy and techniques for dealing with complexities in Information Systems Development.
*Prerequisite: CS 370, BA 271*

**BA 371** **3 cr. 3 hr.**
**Computer Concepts and Programming Techniques**
This course is a survey of technical topics related to computer systems with emphasis on the relationship between computer architecture, system software, and applications software.
*Prerequisite: CS 180, BA 271*

**BA 372** **3 cr. 3 hr.**
**DataBase Management Systems**
This course provides an introduction to the concepts of database processing with emphasis on application programming in a database environment. Physical and logical organization of data, data relationships and operational requirements of a database management system are also discussed.
*Prerequisite: CS 270, BA 370*

**BA 410** **3 cr. 3 hr.**
**Advanced Accounting I**
This course includes accounting problems involved in the preparation of consolidated financial statements and in home and branch office relationships, mergers, and pooling problems are stressed. Special problems in fund and budgetary accounting for government entities and hospitals are covered.
*Prerequisite: BA 221.*

**BA 411** **3 cr. 3 hr.**
**Advanced Accounting II**
The purpose of this course is to develop in the student the ability to solve a variety of complex problems in order to prepare him for either public professional examinations or executive accounting work in private business.
*Prerequisite: BA 410*

**BA 412** **3 cr. 3 hr.**
**Tax Accounting**
This course considers the Massachusetts and Federal Income Tax Laws, with application to individuals, partnerships, fiduciaries, and corporations.
*Prerequisite: BA 211*

**BA 413** **3 cr. 3 hr.**
**Advanced Taxation**
This course will study the Federal income tax laws and regulations applicable to partnerships, corporations, and fiduciaries. Federal gift and estate taxes, reorganizations, and personal holding companies will also be discussed.
*Prerequisite: BA 412.*

**BA 414** **3 cr. 3 hr.**
**Auditing**
The basic concepts of auditing and control are examined in this course. It emphasizes internal control, audit problems, and professional responsibilities of the C.P.A. to the auditing requirements.
*Prerequisite: BA 312*

***BA 417** **3 cr. 3 hr.**
**Fund Accounting**
This course will examine the accounting and reporting principles, standards, and procedures applicable to governmental and not-for-profit entities; such as governmental organizations, hospitals, colleges and universities.
*Prerequisite: BA 211, BA 313*

**BA 420** **3 cr. 3 hr**
**Organizational Behavior and Theory**
This course is a general descriptive and analytical study of organizations from the behavioral science point of view. It includes problems of motivation, leadership, morale, social structure, group networks, communications, hierarchy, and control in complex organizations. The interaction between technology and human behavior is discussed. Consideration of alternative theoretical models is given.
*Prerequisites: PY 110, BA 220, BA 230, and BA 250.*

**BA 421** **3 cr. 3 hr.**
**Social and Political Environment of Business**
This course is a study of the evolution of American business in the context of its changing political and social environment. Analysis of the origins of the American

business creed, the concept of social responsibility of business, and the expanding role of the corporation are included.
*Prerequisites: EC 120, BA 220 and BA 250.*

**BA 422** **3 cr. 3 hr.**
**Business Policy and Strategy**
This is an integrating course embracing all organic management functions. Cases are used as subjects for analysis and systematic decision making practice.
*Prerequisite: senior status*

**BA 425** **3 cr. 3 hr**
**Practical Problems in Business**
This course is designed to explore, discuss, and analyze the values and methods that can be used by our future business managers to make ethical decisions in live business situations. It will provide a basis for consideration of the type of corporate policy and environment essential to minimizing the conflict between "right" and "the end justifies the means."

**BA 430** **3 cr. 3 hr.**
**Sales Management**
This course will enhance the students' understanding and skills in managing the selling function. The emphasis is on personal selling as an element in the marketing mix.
*Prerequisites: BA 230, BA 111, BA 220, and BA 250.*

**BA 431** **3 cr. 3 hr.**
**Retail Marketing**
This course introduces the student to the nature and scope of retail marketing and management. The course will include the structure of retailing, merchandising, buying, pricing, promotion, organization and management of the retail firm.
*Prerequisites: BA 230, BA 111, BA 220, and BA 250.*

**BA 432** **3 cr. 3 hr.**
**Industrial Marketing**
This course centers on the marketing of goods to industrial firms, governmental agencies and other organizations included within the industrial market. The areas covered in the course will include distribution channels, pricing policies, product planning and market strategy.
*Prerequisites: BA 230, BA 111, BA 220, BA 250, BA 330, and BA 332.*

**BA 433** **3 cr. 3 hr.**
**International Marketing**
This course will concentrate on the marketing activities of firms operating in an international market. It will provide the student with an understanding of the factors that influence the selling of products in international markets. It will include the planning, organizing, and controlling of international marketing, along with its law, history, and economics.
*Prerequisite: BA 230, BA 111, BA 220, BA 250, BA 330, and BA 332.*

**BA 434** **3 cr. 3 hr.**
**Developing Marketing Strategies**
Through the use of case studies and, where possible, cooperating businesses and nonprofit organizations, students will identify the pertinent marketing problems and opportunities, assess the organization's resources, and develop viable marketing programs. The course will include new product development and management strategies for effective marketing policies over the course of the entire product life cycle.
*Prerequisites: BA 230, BA 111, BA 220, BA 230, BA 250, BA 330, and BA 332.*

**BA 440** **3 cr. 3 hr.**
**Financial Management of Corporations**
This course covers the analysis and management of the flow of funds through an enterprise. Cash management, source, and application of funds, term loans, types and sources of long term capital. Capital budgeting, cost of capital, and financial structure. It is an introduction to capital markets.
*Prerequisite: BA 240.*

***BA 460** **3 cr. 3 hr.**
**Labor Law I**
A course relating basic labor issues to the legal process. The study begins with a brief history of U.S. labor in the courts, tracing the development of national labor policy in the twentieth century, embodied in the National Labor Relations Act and in related federal law and regulation. The course then considers the role to the National Labor Relations Board and federal courts in determining whether labor organization conduct or employer conduct constitute unfair labor practices under the Act. The course relies mainly on primary materials, both state and federal court decisions, and administrative opinions.

***BA 461** **3 cr. 3 hr.**
**Labor Law II**
A continuation of BA 460.
*Prerequisite: BA 460.*

**BA 470** **3 cr. 3 hr.**
**Applied Software Development**
As the capstone course in the MIS concentration, this course requires the student to apply concepts, principles, and problem solving techniques, strategies and tools learned in previous MIS and business courses to the development of a realistic computer based information system of medium complexity.

**BA 490 Independent Study**
Open to students who have permission of the supervising instructor and the department. Course of study, meetings, and credit by arrangement.

**BA 493** **3 cr. 3 hr.**
**Topics in Business**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under this title.

**BA 497** **15 cr.**
**Internship**
This course is a full semester internship in either the private or public sector. The purpose of the course is to allow the student the opportunity to synthesize the theoretical learning of the classroom with a practical work situation.
*Prerequisite: Permission of the department.*

# Chemistry

Chairman:
*Daniel Robinson*

Professors:
*Daniel Robinson*
*Patrick Delaney*

Assoc. Professors:
*Judith Ciottone*
*Pushkar Kaul*
*Lovell Agwaramgbo*

The degree of Bachelor of Arts in Chemistry must include CH 110, 120, 200, 210, 300, 320, 330, 350, PH 130, 140; MA 230, 240 and at least three semester hours of Chemistry electives at or above CH 360. PH 210 is recommended for all Chemistry Majors and proficiency in German, French or Russian at the second year level is required for the Bachelor of Arts.

The Bachelor of Science in Chemistry must include CH 110, 120, 200, 210, 300, 320, 330, 350; CS 150, and one additional course approved by the Department; PH 130, 140; MA 230,240 and at least 3 semester hours of electives in Chemistry at or above CH 360. PH 210 is recommended. A minor in Chemistry consists of CH 200, 210, and 300 in addition to one course selected from CH 350, 320, 330, 360, 430 or 440.

*Asterisk indicates that the course is offered infrequently.

**CH 100** **4 cr. 6 hr.**
**Industrial Chemistry**
The concepts of chemistry.

**CH 110** **4 cr. 6 hr.**
**General Chemistry I**
The fundamental laws and theories of chemistry such as atomic structure, the periodic table, electrochemistry, descriptive inorganic chemistry, the gas laws, solutions, and chemical bonding. Chemical calculations are emphasized.

**CH 120** **4 cr. 6 hr.**
**General Chemistry II**
Continuation of (and prerequisite): CH 110 or the equivalent.

**CH 130** **4 cr. 5 hr.**
**Chemistry I**
Fundamentals of chemistry for non-science majors. This course is largely limited to inorganic concepts.

**CH 140** **4 cr. 5 hr.**
**Chemistry II**
Continuation of (and prerequisite): CH 130 or the equivalent. It also involves a study of organic chemistry and biochemistry.

**CH 200, 210** **4 cr. 6 hr. each**
**Organic Chemistry I and II**
Properties of organic compounds are discussed in terms of their molecular structures and reaction mechanisms. Recommended for chemistry majors, and or others contemplating graduate study and for those who feel the need for a solid theoretical foundation.
*Prerequisites for CH 200: CH 110 and 120.*

**CH 300** **4 cr. 6 hr.**
**Analytical Chemistry I**
Emphasis on theory and application of Quantitative Analysis. The lectures stress chemical equilibrium, solubility product, complexometric formation, oxidation-reduction, and stoichiometric calculations.
*Prerequisites: CH 110 and 120 or the equivalent.*

**CH 320** **4 cr. 6 hr.**
**Physical Chemistry I**
The underlying principles of chemistry from a physical chemistry standpoint. Kinetic theory, theories of the structure of matter, theory of electrolytic solutions,

electrochemistry, thermodynamics, kinetics.
*Prerequisite: CH 300 or the equivalent. Offered in alternate years.*

**CH 330** **4 cr. 6 hr.**
**Physical Chemistry II**
Continuation of (and prerequisite): CH 320. Offered in alternate years.

**CH 350** **4 cr. 6 hr.**
**Analytical Chemistry II**
Essentially a laboratory course in Instrumental Analysis including one hour lecture per week. Laboratory experiments include spectrophotometric, conducto metric, potentiometric, and chroma tographic analysis.
*Prerequisite: CH 300 or the equivalent.*

**Advanced Topics: Student and faculty availability determine the following course offerings.**

***CH 360** **3 cr. 3 hr.**
**Advanced Inorganic Chemistry**
Valancy theories, acid-base theories, reactions in non-aqueous solvents, complexation and chelation, physical measurements.
*Prerequisite: CH 320 or the equivalent.*

**CH 400** **3 cr. 6 hr.**
**Natural Products Chemistry**
Isolation, purification, and identification of pure compounds from a variety of naturally occurring substances. Special techniques will be introduced whenever feasible. Six hours of laboratory.
*Prerequisites: CH 200 and 210.*

**CH 410** **4 cr. 6 hr.**
**Biochemistry (See BI 410).**
*Prerequisite: CH 250 or CH 210.*

***CH 420** **4 cr. 6 hr.**
**Polymer Chemistry**
An introduction to the synthesis and properties of macromolecules which also serves as an application of chemical principles to this interesting and important group of materials. Two hours of lecture and one four-hour laboratory period.
*Prerequisites: CH 200 and 210 or the equivalent.*

**CH 430** **4 cr. 4 hr.**
**Radiation Chemistry**
Fundamentals of radiation chemistry, including radioactivity, atomic nuclei, nuclear reactions, activation analysis, reactors, and radiation detection and measurement with emphasis on the use of radioactive materials in chemical applications.
*Prerequisites: CH 300, PH 140.*

**CH 490** **1 to 3 S.H.**
**Independent Study in Chemistry**
Laboratory research under guidance of the Chemistry staff.
*Prerequisite: Permission of the Instructor.*

**CH 493** **3 cr. 3 hr.**
**Topics in Chemistry**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under this title.

**CH 494, 495** **3, 6 cr.**
**Internship**
Assigned work in an industrial or government or private research laboratory to give experience in the students major.

# Communications Media

Chairman:
*Lee DeNike*

Professors:
*William Bowers*
*Lee DeNike*
*David Ryder*

Assoc. Professors:
*Peter Laytin*
*Helen Obermeyer-Simmons*

Assist. Professors:
*George Bohrer*
*Gunther Hoos*
*Ann Mrvica*
*Humphrey Regis*
*Elliot Hoffman*
*Bonnie House*

Instructors:
*Jacqueline LaCoy*
*Larry Maness*

The Communications/Media Program prepares individuals to assume communication positions as freelancers, independent producers or employees of corporations, institutions, and media organizations. The program provides a blend of the principles and practices necessary for the effective design, production and evaluation of media for information presentation by graphic, photographic, film, television, electronic and print technologies. In addition, this program, in combination with the social sciences, humanities, sciences and mathematics fosters the development of those life long skills critical to adapting to an ever changing technological and knowledge based society.

## *B.S. in Communications/ Media:*

Major concentrations provided in: Technical Writing, Television Production, Photography, Film Production, Graphic Design. Minor concentrations provided in: Interdisciplinary Graphics (See Graphics).

## *The "Visions" Honors Show*

Each May the Communications/Media Department faculty host the annual juried honors exhibit of the best student work. Communications/Media students from all concentrations enter their work. Photographs and graphics are displayed in the campus gallery, while films, videotapes and multi-image programs are shown in the campus screening room. The "Visions" show is an important recognition of the professional and artistic work done by Communications/ Media students.

*Asterisk indicates that the course is offered infrequently

## *Courses Designed for Communications/Media Majors:*

## *Phase I Theoretical*

Phase I is the foundation of the program and is comprised of three required courses. Students are introduced to a variety of language and code systems used in print and non-print media. Other studies include an introduction to the creation and interpretation of visual messages, and the technology used to convey messages.

**CM 110** **3 cr. 3 hr.**
**Communication Theory**
This is a broad-based introduction to the theory of communication and a comparative treatment of the sign systems or languages through which one communicates. Exploration of the various sign systems will serve as the vehicle for illustrating much of the communication theory relating to the media field.

**CM 112** **3 cr. 3 hr.**
**Message Design**
An introduction to visual communication for the development of visual literacy. Students will become involved with a variety of activities in pre-visualization, planning, designing, making and evaluating visual messages. This course specifically relates to the communications concentrations taught in Phase III: Technical Writing, Television, Photography, Film, and Graphic Design.

**CM 113** **3 cr. 3 hr.**
**Introduction to Communications Systems**
A study of selected systems of communication. Focuses upon sources and development of ideas basic to these systems as well as the physical relationships in the encoding, decoding, and storage of communication transmission systems. Topics include electronic communication systems, film, graphics, photography, print, radio and television.

## *Phase II Basic Technical Development*

Phase II courses are designed to develop the basic technical skills needed for entering the professional concentrations. These courses should be taken during the freshman year. Two courses are required and should be selected with the consent of the advisor.

**CM 230** **3 cr. 3 hr.**
**Sound Production**
A basic course in the theory and practice of sound recording and sound mixing for film and television. The course includes location and studio recording, sound editing, and multi-track sound mixing.

**CM 232** **3 cr. 3 hr.**
**Script Writing**
A basic course in script writing for film, television and multi-image productions including preparation of proposals, treatments, storyboards, and scripts. The emphasis is on scripts for documentary and industrial programs.

**CM 233** **3 cr. 3 hr.**
**Color**
An introduction to the basic principles of color as they relate to graphics, film, photography and television. Emphasis is given to color's physical, psychological and perceptual components.

## *Phase III Concentrations*

Phase III enables students to become involved with an in-depth investigation of an area in communications which is most closely aligned with individual talents and interests. In addition to the stated prerequisites for individual courses in the phase, students must have completed all required Phase II courses prior to entering Phase III. Students should consult with their advisor regarding the appropriate basic technical development courses for their chosen concentration and the approrpriate courses to take within a concentration. The completion of at least six courses within a concentration is required.

## *Technical Writing Concentration*

**CM 340** **3 cr. 3 hr.**
**Journalism**
Readings in the mass media with individualized writing assignments. Some emphasis on the technical aspects of newspaper work. (Credit will not be given for both CM 340 and EN 280.)

**CM 341** **3 cr. 3 hr.**
**Writing For Business and Technology**
A study of writing for students interested in business, industry, and management. Includes business correspondence, description of process and mechanisms, sets of instructions, proposals, abstracts, reports, etc. (Credit will not be given for both CM 341 and EN 386.)

***CM 342** **3 cr. 3 hr.**
**Feature and Magazine Writing**
Writing feature articles for newspapers, magazine, and trade journals. (Credit will not be given for CM 342 and EN 387.)

***CM 345** **3 cr. 3 hr.**
**Writing for Public Communication**
Emphasis on fundamentals of writing for public communication; analysis of variables, viz., readability, color clarity, organization of material, flow, crispness. Customary forms used in the field including news releases, features, profiles, articles, editorials, manual copy. Further examination of institutional editor as creative interpreter of messages to numerous publics inside and outside the organization.
*Prerequisite: CM 341.*

***CM 346** **3 cr. 3 hr.**
**Public Relations**
Treatment of definitions and concepts, history, potential careers, research methods. Focus is on role of managed communications in public relations unique to industry, human services and education institutions.
*Prerequisite: CM341.*

## *Television Production Concentration*

**CM 350** **3 cr. 3 hr.**
**Introduction to Television Production**
Introduction to television production techniques using both studio and electronic field production (EFP). This course builds the technical and creative foundation for all subsequent television courses. Student purchase of videotape is required.
*Prerequisites: CM 230, 232.*

**CM 351** **3 cr. 3 hr.**
**Television Studio Production**
This course is entirely studio based. All production is live-on-tape. Topics include: studio lighting, camera operation, technical directing, directing, studio sound recording and mixing as well as numerous other floor and control room operations. All students will direct and crew in class productions. Student's purchase of videotape is required.
*Prerequisite: CM 350*

**CM 352** **3 cr. 3 hr.**
**Interactive Video Production**
This course provides the basic skills needed to produce and program for the computer interactive videodisc. Students write, flowchart, shoot and edit an interactive program on videotape. Then simulating videodisc operation, they program a computer to provide graphics, learning options and testing of this video material. Student purchase of videotape and floppy disk is required.
*Prerequisites: CM 350, 351, 356.*

**CM 354** **3 cr. 3 hr.**
**Advanced Television Production**
This upper-level production-oriented course provides students the opportunity to produce portfolio quality work. Drawing on studio and EFP production techniques, students write, shoot and edit a sophisticated television program. Content may be industrial, documentary, commercial or dramatic. Student purchase of videotape is required.
*Prerequisites: CM 350, CM 351, CM 356.*

**CM 355** **3 cr. 3 hr.**
**Production Management**
This course examines the fundamentals of production management: production budgets, production scheduling, contracts and agreements, union regulations for actors and crew members, shooting permits, legal implications and financial structures. This course may be taken by television or film students.
*Prerequisites: CM 350, CM 351, CM 356 or CM 370, CM 371, CM 372.*

**CM 356** **3 cr 3 hr.**
**Electronic Field Production (EFP)**
Development of the skills necessary for non-studio on-location television production including: shooting and recording with color EFP equipment; location sound recording; location lighting; directing; electronic editing and other post-production techniques. Students are responsible for the purchase of videotape.
*Prerequisites: CM 350*

## *Photography Concentration*

**CM 360** **3 cr. 3 hr.**
**Photography I**
An introduction to the technical and aesthetic aspects of photography such as exposure techniques, film, paper, and basic 35mm camera work. Students are responsible for all paper and film supplies.

**CM 361** **3 cr. 3 hr.**
**Photography II**
A continuation and refinement of the material covered in CM 360, Editing, sequencing and visual articulation are stressed. Students are responsible for all paper, film and mounting materials.
*Prerequisite: CM 360.*

**CM 362** **3 cr. 3 hr.**
**Photography III**
An introduction to medium format photography, with advanced work in 35mm photography. Studio lighting and portraiture will be explored. Students are responsible for all paper, film and mounting materials.
*Prerequisite: CM 361.*

**CM 363** **3 cr. 3 hr.**
**Large Format Photography**
This course will specialize in 4 x 5 photography and the use of the Zone System. Students are responsible for all paper and film supplies.
*Prerequisite: CM 361.*

**CM 364** **3 cr. 3 hr.**
**Color Photography**
An introduction to color photography basic theory, C-prints, paper, and Chemistry. Students are responsible for all paper and film supplies.
*Prerequisite: CM 361.*

**CM 365** **3 cr. 3 hr.**
**Photo History**
A survey of the development of photography to the present day.

**CM 366** **3 cr. 3 hr.**
**Photo Management**
Students will be able to design a space for private, commercial and educational usage. Included will be an understanding of flow, function, equipment inventory, recordkeeping and budget control.
*Prerequisites: CM 361*

**CM 367** **3 cr. 3 hr.**
**Multi-Image Production**
Development of skills necessary to plan, produce and present multi-image productions for industry, education and health care facilities. The course includes: scripting; photography; graphics; programming of up to nine slide projectors; sound recording and mixing, as well as the basics of effective multi-image presentation. Students are responsible for all supplies.
*Prerequisite: CM 360*

***CM 368** **3 cr. 3 hr.**
**Bio-Medical Photography**
Examination and practice with the current techniques in applying photography to the biomedical field. Students are responsible for all paper and film supplies.
*Prerequisites: CM 362*

**CM 369** **3 cr. 3 hr.**
**Photography Seminar**
Advanced study in the medium. Students are responsible for all paper and film supplies.
*Prerequisites: CM 362, or CM 363, or CM 364.*

## *Film Production Concentration*

**CM 370** **3 cr. 3 hr.**
**Film Production I**
An introduction to the principles of filmmaking including the technical and creative aspects. Students are introduced to cameras, film stocks, exposure, lighting, composition, camera movement, cinematic storytelling and editing. As part of the coursework, students produce several short films in silent Super 8. Students are responsible for film purchase and processing.
*Prerequisites: CM 230, 232*

**CM 371** **3 cr. 3 hr.**
**Film Production II**
This course adds sound in the form of single-system Super 8 production to the filmmaking process. Emphasis is on the production of several films for which sound must be recorded or created. Cinematographic, directing and editing skills are sharpened. Students are responsible for all film purchasing and processing.
*Prerequisite: CM 370*

**CM 372** **3 cr. 3 hr.**
**Film Production III**
Film Production III teaches the fundamental skills of double-system film production — the methodology of all professional motion picture production. Using the most advanced double-system Super 8 equipment anywhere, students produce a sophisticated and professional film as their class project. Students are responsible for all film supplies.
*Prerequisites: CM 370.*

***CM 373** **3 cr. 3 hr.**
**Advanced Production Seminar**
Open to students specializing in film or television, this course deals with the role of the director and producer. Topics include: casting; directing professionals and nonprofessionals; working with talent agencies; hiring crews; production logistics, etc.
*Prerequisites: CM 371 or CM 350.*

***CM 374** **3 cr. 3 hr.**
**16mm Production**
This advanced course examines professional 16mm production and postproduction techniques. Topics include: film stocks; laboratories, lighting and grip equipment; 16mm and 35mm cameras; sound recording and editing; film editing; negative matching; interlock mixing and film-to-tape transfers. Students, as part of the course, produce a professional 16mm film. Film and processing costs are shared by all students.
*Prerequisites: CM370 and permission of the instructor.*

**CM 377** **3 cr. 3 hr.**
**Survey of Film**
A study of the narrative and documentary films by American and foreign directors. Films will be screened in each class and discussed. Discussions and lectures will range from the artistic and cultural to the psychological and commercial aspects of films. Students will write several critiques and a term paper.

## *Graphic Design Concentration*

**CM 381** **3 cr. 3 hr.**
**Graphic Design I**
A problem solving approach to graphic design. The course involves projects with the physical and psychological aspects of graphic communication using graphic and typographic forms. Emphasis is on the effects of design on the communication process. Students are responsible for all graphic supplies. (Credit will not be givenfor both CM 381 and IT 252.)

**CM 382** **3 cr. 3 hr.**
**Graphic Design II**
An examination of the relationship of graphic design to the changing socioeconomic forces in our society. This interrelationship is made evident through the process of solving specific related design projects. Problems are approached and solutions reached through teamwork and evaluated by joint critique. Students are responsible for all graphic supplies.
*Prerequisite: CM 381.*

**CM 383** **3 cr. 3 hr.**
**Graphic Design/Photography**
Commercial applications of photography will be explored, including product presentation, advertising, illustration, promotion, and publication photography. The designer as a photographer will solve assigned problems using various techniques and materials including photo modification, various treatments, resin coated papers and Kodalith films. Students are responsible for all graphic supplies.
*Prerequisites: CM 360, CM 382.*

***CM 384** **3 cr. 3 hr.**
**Graphic Management**
A study of the theories and practices of advertising, sales, and marketing management in business, industry and education with emphasis on the graphic designer in the roles of creative art director, production manager, and designer illustrator.
*Prerequisite: CM 382.*

***CM 385** **3 cr. 3 hr.**
**Display and Signage**
A survey of the field of general display, P.O.P. display, signage systems, identifiers and other larger forms of graphic expression. Emphasis on clear communication of information, ease of recognizability, and coherence of designed systems. Problems will be taken through finished product or "mock-up." Students are responsible for all
graphic supplies.
*Prerequisite: CM 382.*

***CM 386** **3 cr. 3 hr.**
**Publication Design**
An exposure to the design of text-intensive pieces. A discussion of effects of type choice on readability, use of white space, and methods of illustration are included. Problems involve copy casting, type selection, layout and design of multi-paged work, and choice of format and illustration. Students are reponsible for all graphic supplies.
*Prerequisites; CM 382, CM 388, or permission of Instructor.*

***CM 387** **3 cr. 3 hr.**
**Package Design**
A study of the graphic processes in three-dimensional packaging with emphasis on the various materials and display requirements. Students will investigate letterpress, offset, and silk screen processes. Students are responsible for all graphic supplies.
*Prerequisite: CM 382.*

**CM 388** **3 cr. 3 hr.**
**Typography, Comprehensives and Mechanicals**
An in-depth study of letter forms from ancient through modern photo-modified type. Projects involve the whole process from rough design, through comprehensives, to "camera-ready" mechanicals. Students are responsible for all graphic supplies.
*Prerequisites: CM 381, CM 382.*

**CM 389** **3 cr. 3 hr.**
**Electronic Graphic Design**
An introduction to the techniques and tools utilized to create, manipulate and organize the graphic image through the use of electronic media. This course will demonstrate present and future applications of electronically generated images as they relate to the graphic designer. Students will have hands-on experience with computer and television technology as well as presentations of relevant topics.
*Prerequisite: CM 382.*

**CM 390** **3 cr. 3 hr.**
**Graphic Design III**
Advanced study in graphic design concentrating on technical and creative illustration. Students will work in various media including pen and ink, watercolor, marker and airbrush.
*Prerequisite: CM 382.*

**CM 391** **3 cr. 4 hr.**
**Graphic Arts Production**
This course provides the skills necessary to product printed products. Students will complete projects in computer aided design, utilize CRT typesetters, operate process cameras, prepare printing plates, precisely match ink colors and print their projects. The very important relationship between the designer and the commercial printer will be emphasized. (Credit will not be given for both CM 391 and IT 150.)
*Prerequisite: CM 381 or permission of Instructor.*

**CM 392** **3 cr. 3 hr.**
**Advanced Electronic Graphic Design**
An advanced course in computer graphics. The course covers application of electronically generated images as they relate to the graphic designer and the use of computer graphics work stations. Topics of study include: digital typography, illustration systems, television graphics, computer layout and pagination, package design and presentation graphics.
*Prerequisites: CM 381, 382, 389 or permission of the instructor.*

## *Phase IV Professional Development*

Courses in Phase IV focus on the professional knowledge and skills necessary to be an effective communicator. Students select three course with the consent of the advisor. CM 420 is strongly recommended.

**CM 420** **3 cr. 3 hr.**
**Human Communications Technology**
A study of the human relations problems associated with the introduction of communications technology into industry, business, schools and other public or private agencies. Students conduct an intrapersonal and interpersonal self-inventory to identity those qualities and skills which should be stressed and those which need improvement for shaping their communication with people who may have different attitudes and values toward a particular technology. An in-depth study of the application of communications technology in an assigned corporate or business setting will be conducted.
*Prerequisite: Completion of all Phase I and Phase II courses. This is a senior level course.*

**CM 422** **3 cr. 3 hr.**
**Organizational Communication**
An examination of the organizational and management procedures used as vehicles for communication within organizations.
*Prerequisite: Completion of all Phase I and Phase II courses.*

**CM 423** **3 cr. 3 hr.**
**Communications Law and Ethics**
This course is a broad-based introduction to communications law and media ethics. Topics include: copyright laws, libel, the Fairness Doctrine, cable and broadcast law, privacy as well as a discussion of the U.S. legal process. Guest speakers and field trips augment classroom discussions.
*Prerequisite: Completion of all Phase I courses.*

## *Phase V Practicum*

This required senior level phase provides an opportunity for students to apply their knowledge and skills in a professional environment.

**CM 488** **12 cr. 36 hr.**
**Practicum**
A full semester on-or off-campus internship requiring 15 36-hour weeks of work in which Communications Media majors apply their knowledge and skills to the practical solution of communications problems.

*Prerequisites: Completion of all Phase I, II, III and IV Communications/Media courses with an average cumulative Communications/ Media grade point average of 2.5 or better. Approval by Communications/ Media Practicum Committee.*

## *Enrichment Courses*

These courses may be taken, with the consent of the advisor, to supplement the required program for a Communications/ Media major.

**CM 490 Independent Study**
Independent Study provides the opportunity for highly self-motivated students to explore areas of Communications/Media not provided within the departmental curriculum. Research methodology is to be used and a written monograph is to be presented to the faculty sponsor. Approval of a faculty sponsor, consent of the advisor and permission of the Department Chairperson is required.

**CM 493** **3 cr. 3 hr.**
**Topics in Communications/Media**
The content of this course varies from semester to semester. It is designed to allow the teaching of material not normally covered in any other course or to present a new course on a trial basis. The content may be theoretical or drawn from one of the concentrations.

**CM 494** **3 cr. 9 hr.**
**CM 495** **6 cr. 18 hr.**
**Internship**
A field experience which permits students to develop the knowledge and skills acquired in the classroom. A portfolio of the work completed is to be presented to the faculty sponsor. Only juniors and seniors are eligible. *Approval of a faculty sponsor, sanction of a site supervisor, consent of the advisor, and permission of the Department Chairperson is required.*

# Computer Science

Chairperson:
*Aparna Mahadev*

Assoc. Professors:
*William Brown*
*Robert McGuire*
*Robert Shaughnessy*

Professor:
*Theodore Lapierre*

Asst. Professors:
*Frank Archambeault*
*Gerald Johnson*
*Frits Lander*
*Aparna Mahadev*
*Charles Wilson*
*Tahar Bouhafs*
*Diana Lafalam*

The Computer Science Program provides for students to develop a unique blend of knowledge and skills in the areas of computer software, computer hardware, and mathematics. The program is designed to prepare students for positions within organizations that design and construct hardware and/or software systems and as such is oriented to software and hardware engineering. The Degree of Bachelor of Science in Computer Science must include: CS 150, CS 155, CS 160, CS 165, CS 250, CS 260, CS 280, CS 360, MA 230, MA 240, PH 130, PH 140 plus an additional 15 S.H. of Computer Science Electives, 6 S.H. of Math electives above MA 240.

A minor in Computer Science consists of the following four courses: CS 150 Intro. to Computer Science CS 155 Data Structure CS 280 Assembly Language Programming CS 320 Programming Languages and two additional computer science electives (6 semester hours). It should be noted that enrollment in the Computer Science minor is limited.

Interdisciplinary Graphics Minor, see, Graphics.

*Asterisk indicates that the course is offered infrequently.

**CS 100** **3 cr. 3 hr.**
**Introduction to Programming**
This course provides an opportunity to learn a higher level programming language, to gain experience in the design, coding and utilization of computer programs and to gain insight into the responsibilities that humans have when they are involved with computers.

Topics include: the syntax and semantics of a higher level programming language, the design, coding, testing and application cycle, application areas, man-machine interrelationships. Several programming assignments are included.

Prior to enrolling in this course, the student should have working knowledge of high school algebra. (CS 100 does not carry credit toward a Computer Science major.)

**CS 150** **3 cr. 3 hr.**
**Introduction to Pascal**
An introduction and foundation for further study in Computer Science and more specialized programming language courses. Students design programs using a top-down modular approach and code programs using a style. They should be well prepared to enroll

in more specialized higher level programming language courses.

**CS 155** **3 cr. 3 hr.**
**Data Structures**
This course presents the most common methods of organizing information to be used in problem solving and emphasizes algorithm, development and programming style. Using the programming language Pascal, the student will practice the structured programming techniques introduced in earlier courses.

After taking this course, the student should have a firm foundation in computer science and ability to solve a wide variety of programming problems. The student will have been introduced to the "science" of computer science, as opposed to the "coding" of computer programming.

The data structuring techniques studied will include: arrays, records, sets, linked lists, and trees. The structured programming concepts studied will include: loopinvariants, data abstraction, step-wise refinement, and top-down programming. Particular attention will be spent on the interaction between data structures and storage structures and the trade-offs involved in data structure selection.
*Prerequisite: CS 150*

**CS 160** **4 cr. 5 hr.**
**Introduction to Electronics**
An introduction to modern solid state devices and circuits. These include: diode rectifiers, power supply design, OP amps, and oscillator circuits. Extensive laboratory work illustrates the operation and behavior of circuits as well as the use of modern laboratory test equipment.

Topics include: semiconductor principles, diodes, circuits, power supply design, bipolar and FET transistor applications, OP amp circuits and applications, oscillators, and linear integrated circuits. Weekly laboratory sessions are included.
*Prerequisites: PH 240, MA 230 (or concurrent).*

**CS 165** **4 cr. 5 hr.**
**Digital Electronics**
A study of the design and application of electronic logic circuits including an analysis of sequential logic circuits using Boolean algebra and Karnaugh maps. Counters, registers, serial and parallel adders and arithmetic units are included.

The topics in the course include: Boolean algebra, algebraic simplification, Karnaugh mapping, Quine McCluskey method, combinational logic circuits, sequential logic circuits, comparison of TTL, MOS ECL logic families, the arithmetic unit, coding and decoding, parity detection and generators, multiplexers, demultiplexers. Extensive laboratory work supplements the topics studied.

Before taking this course the student should have an understanding of topics covered in a basic electronics course, including the operation of diodes and transistors, amplifiers, and oscillators.
*Prerequisite: CS 160.*

**CS 200** **3 cr. 3 hr.**
**Computer Graphics for Non-Computer Science Majors**
This course is designed to teach non-computer science majors the fundamentals of graphics programming using Turbo Pascal on the AT&T computer. The student will write programs demonstrating mastery of the following graphics techniques: rotation, scaling, translation, clipping, windowing, graphing, and animation.
*Prerequisites: CS 150, CS 155, or permission of the instructor.*

**CS 250**
**Introduction to Numerical Methods**
An in-depth study of the programming language FORTRAN with emphasis on numerical methods. This course is an advanced programming course and assumes a knowledge of structured programming. Elements of numerical methods are introduced and integrated concurrent with appropriate programming topics and/or problem solving situations.

This course provides a solid background for applications in graphics, simulation, engineering, and business. A substantial number of programming assignments are included.
*Prerequisites: CS 155, MA 230, with MA240 recommended.*

**CS 255** **3 cr. 3 hr.**
**Assembly Language Programming**
A study of the basic operation of a computing system at the assembly language level. A detailed knowledge of an assembly language and an enhanced understanding of higher level languages are course objectives.

One of the available computer systems will be selected for an in-depth study and for programming applications. The course content will include: numerical and character representations, mnemonic operations, instruction formats, location counters,

relocation, literals, error flag, addressing modes, parameter passing, subroutine linkage, macros, conditional assembly, device controllers, character-to-integer conversion, and simple data structure realizations.
*Prerequisite: CS 155*

**CS 260** **4 cr. 5 hr.**
**Computer Organization**
An analysis of digital and analog computers in terms of their hardware and the interaction of the hardware and software within the machine.

Topics include: machine language programming, core memories, RAMS, ROMS, PROMS, methods of magnetic recording on tape, discs, ASCII coding, a typical minicomputer, bus structure, time, control, organization of a typical microprocessor.
*Prerequisites: CS 165, CS 255.*

**CS 270** **3 cr. 3 hr.**
**COBOL-I**
An introduction to the COBOL programming language and top-down program design using the ideas of structured programming. Some of the techniques used to process business data are covered.

Students design and code COBOL programs for the solution of problems requiring multiple fixed and or variable length records for sequential files. Course content includes: Cobol, identification, environment, data and procedure divisions, problem definition, output format design, input data, record and file design, top-down program design, arithmetic and logical operations, sequential disk files, table-handling, and a substantial number of programming projects.

Before taking this course, the student should have had experience programming with a higher level language and be aware of the function of the major hardware and software components of a digital computer system. Those students desiring working knowledge of COBOL beyond the introductory level should consider CS 275 as a successor course to CS 270.

***CS 275** **3 cr. 3 hr.**
**COBOL-II**
A study of the facility of COBOL for table and file handling with particular attention to indexed sequential files and variable length records. It is intended for those students interested in becoming able to make substantial contribution in the area of business data processing.

After completing this course, the student should be able to design and code a modest system of programs and provide substantial assistance in the design and coding of larger programming systems.

Topics include: sorting and merging files, table handling, variable length records, indexed sequential access method, file creation, updating and reporting. Includes a substantial number of programming projects.

Before taking this course, the student should have experience that substantially includes the methods and activities of COBOL-I (CS 270).

**CS 300** **3 cr. 3 hr.**
**Interactive Computer Graphics I**
Programming device independent graphics and windowing, clipping, segmentation, viewpoints, panning, zooming. Interactive devices implementation of software. Mathematical aspects are 2D and 3D transformations, projections, hidden line ellimination, viewing in 3D. Consideration of Advanced Display Architecture, Raster Algorithms, Shading, Intensity, Color.
*Prerequisites: CS 155, CS 280, CS 260, MA 240.*

**CS 310** **3 cr. 3 hr.**
**Operating Systems**
This course analyzes the structure and operation of modern operating systems with emphasis on the layered, or levels of abstraction, approach to their design. Major topics include: management of processes, primary and auxiliary storage, processor, and network interaction. A variety of data models and algorithms are explored in the process of defining the operating system kernal and hardware and CPU features are elucidated. Operating systems studied include: UNIX, VAX/Vms, CPM, MS-DOS, OS-9, and VRTX.
*Prerequisites: CS280, CS260*

**CS 320** **3 cr. 3 hr.**
**Programming Languages**
A study of algorithmic and symbolic programming languages. Languages are selected for study based on their current/predicted importance as well as their features that support fundamental aspects of software engineering.
*Prerequisites: CS250, CS255*

**CS 330** **3 cr. 3 hr.**
**Simulation I**
The purpose of this course is to introduce the art and techniques of system simulation.

Topics include: Theory of system simulation, design of system simulation models, Monte Carlo Technique. Higher-level programming languages (FORTRAN and/or PASCAL) and a discrete system simulation language (GPSS) are used. Several programming assignments are included.
*Prerequisites: CS 250, MA 240*

**CS 340** **3 cr. 3 hr.**
**Data Communications/Networking**
This course examines local area network technology and architecture through basic data communications principles, newly developed concepts, and practical hands on experience. All networking fundamentals will be presented based on the modular approach of the ISO standards. Network models to be studied will include the local area network (LAN), the high speed local network (HSLN), and the digital switch/digital private branch exchange (PBX). Student projects will give additional experience with data communications using modems, and AT&T's Information Systems Network (ISN) and both DOS and UNIX computer systems. Protocol development and complex mesh networks will also be studied.
*Prerequisite: CS 250, CS 260, CS 280*

**CS 360** **4 cr. 4 hr.**
**Microprocessor Laboratory**
A detailed study of the microprocessor, and some if its applications. Emphasis is placed on a current microprocessor, its hardware and software, and its associated family of integrated circuits.

Students design a microprocessor system, configuring the random access memory, the read-only memory, peripheral devices using peripheral interface adaptor, as well as the combinational logic for the address decoding. The student will write software to control peripheral devices and program EPROMS for the control sofware.

The contents of course include: the microprocessor, peripheral devices, instruction set, addressing modes, programming EPROMS.

Before taking the course, the student should be thoroughly familiar with digital electronics, and have some understanding of assembly language programming.
*Prerequisites: CS 260, CS 255*

**CS 365** **4 cr. 5 hr.**
**Microprocessor Applications I**
The student will investigate the techniques by which microprocessors may be linked to the physical signals of the real world. Topics to be studied include transducers, signal conditioning, analog to digital conversion, digital to analog conversion, nyquist criteria, signal processing software, and data communications techniques. Theory will be applied in corresponding laboratory work which will include a complete design project. Commercial microcomputer development systems will be discussed and used as a design aid.
*Prerequisites: CS 360, CS 255.*

**CS 390** **3 cr. 3 hr.**
**Numerical Methods for Digital Computation**
This course provides the student with a study of basic algorithms used in scientific computer work and affords an opportunity to apply related programming techniques using a digital computer. The emphasis is placed upon building algorithms for the solution of numerical problems, the sensitivity of these alogrithms to numerical errors, and the efficiency and accuracy of these algorithms on various computers. The student is expected to complete a number of computational projects using suitable procedure-oriented programming languages.
*Prerequisites: MA 240, CS 155, CS 250, one additional procedure-based programming language (e.g. Pascal or "C").*

**CS 400** **3 cr. 3 hr.**
**Interactive Computer Graphics II**
A continuation of Interactive Computer Graphics I with focus on modern display architecture, 3D models and splines hidden edges and surface removal, shading, color and intensity, introduction to Image Processing.
*Prerequisites: CS300*

***CS 401** **3 cr. 3 hr.**
**Computer Graphics III**
Advanced topics in computer graphics, including 3D Realism, image processing (storage and manipulation), object recognition and graphic standards.
*Prerequisites: CS 400, MA 340.*

**CS 420** **3 cr. 3 hr.**
**Compiler Construction**
A study of the techniques involved in the analysis of source language code and the generation of efficient object code.

This course focuses more on the front end of the compiler (analyzer) than it does the tail end (or generator). Topics include: language definition, lexical, syntatic and semantic analysis, code generation. Students working in small project teams modify an existing compiler. Several programming assignments are included.

*Prerequisites: CS 250, CS 280, CS 260 with CS 320 recommended.*

**CS 430** **3 cr. 3 hr.**
**Simulation II**
This course continues the topics which were introduced in Simulation I. The course content will include: probability concepts in Simulation, queueing theory, introduction to SIMSCRIPT, simulation programming techniques, and analysis of simulation outputs.
*Prerequisite: CS 330*

**CS 440** **3 cr. 3 hr.**
**Software Design**
This course provides the student with an opportunity to obtain practical experience in developing and implementing software systems. Students work in project teams and apply principles of structured design and coding toward the solution of assigned problem(s).

The software projects undertaken in this course will vary and interested students should consult with the course instructor prior to enrolling.
*Prerequisites: Completion of Computer Science Core courses plus permission of instructor.*

**CS 450** **3 cr. 3 hr.**
**DataBase Design**
This course presents the basic concepts of a database system. The three distinct approaches to the design of such a system, namely, relational, hierarchical and network approaches will be studied in detail. The problems of security and integrity in a database system are also studied. Distributed database systems will be discussed if time permits. Various programming projects will be undertaken to design a DBMS.
*Prerequisite: CS 150 and permission of the instructor.*

***CS 460** **3 cr. 4 hr.**
**Microprocessor Applications II**
The students will study advanced topics in microprocessor applications. An advanced project will be assigned to each student at the beginning of the course. Extensive use will be made of commercial microcomputer development systems to assist in the design of the student project.

Upon successful completion of this course, the student should have completed an advanced project developing a microprocessor controlled system for a particular application. Evidence for completion will include a comprehensive written report as well as an oral presentation demonstration.
*Prerequisite: CS 365.*

**CS 465** **3 cr. 5 hr.**
**Robotics I**
An investigation of the mechanical, electrical, sensing, and control problems that must be solved to make a robot work in a particular application.

Robotic software will be developed, and a laboratory robot will be used to demonstrate applications. The robot will have sensors to provide input data and robot behavior will be modified according to data received.
*Prerequisite: CS 260.*

**CS 467** **3 cr. 3 hr.**
**Advanced Assembly Language**
An advanced programming course designed to develop a complete and integrated system of hardware interfacing and data analysis in a computer laboratory environment.
*Prerequisites: CS 280, CS 260.*

***CS 470**
**Programming Practicum**
This course provides an opportunity for a student, working under the direction of a participating faculty member to study or conduct research in an area not covered in other courses.

Typical areas of study include: computer graphics, compilers, operating systems, computer-aided instruction, microprogramming and data structures. The background required of the student, prior to taking this course, depends entirely on the particular area of study or research. Permission of the instructor is required.

**CS 490**
**Independent Study**
Open to students who have permission of the supervising instructor and the department. Course of study, meetings, and credit by arrangement.

***CS 493** **3 cr. 3 hr.**
**Topics in Computer Science**
The objective of this course is to study a topic of current interest in computer science. This course serves as a vehicle for curriculum experimentation and/or enrichment.

After completing this course, the student should have an understanding of some current advance in computer science and/or greater understanding of a particular topic that is of current interest.

The background required of the student, prior to taking this course, depends upon the topic, but generally a background equivalent to about five prior computer science courses would be the minimum expected.

**CS 494, 495, 496** **3, 6, 12 cr.**
**Internship**

# Economics

Professor:
*Caroline Murphy*

Assoc. Professor:
*Nancy Wiegersma*

Asst. Professors:
*Alex Donkor*
*Michael Turk*

The degree of Bachelor of Science in Economics requires Principles of Economics: Macroeconomics and Microeconomics (EC 100, 120), Intermediate Macroeconomics and Microeconomics (EC 366, 365), Money and Banking (EC 140), History of Economic Thought (EC 300), Business Statistics (MA 280), Calculus for Business (MA 220), and at least 9 hours of electives in Economics.

Students who wish to transfer into the Economics major from another major in the college or from an Undeclared status must have a 2.5 cumulative average.

A minor in Economics consists of EC 100 and 120 in addition to four courses selected from EC 130,140, 150, 160, 300, 320, 340, 350, 355, 360, 365, 366, 370, 490, and GE 300.

*Asterisk indicates that the course is offered infrequently

**EC 100** **3 cr. 3 hr.**
**Principles of Economics: Macro-economics**
This course is a study of the theory of employment, income and growth. Stabilization policy and current problems in American capitalism are emphasized.

**EC 125** **3 cr. 3 hr.**
**Introduction to Economics**
This course is an introduction to economics course for non-majors.

**EC 120** **3 cr. 3 hr.**
**Principles of Economics: Micro-economics**
Students examine the theory of the consumer and the business firm. Efficiency in the allocation of resources is examined in four different market structures: pure competition, pure monopoly, monopolistic competition and oligopy.
*Prerequisite: EC 100.*

**EC 130** **3 cr. 3 hr.**
**Consumer Economics**
This course emphasizes theories of consumption and economic functioning, demand, consumer problems, standards of living, policies for protecting consumers and expanding consumption.

**EC 140** **3 cr. 3 hr.**
**Money and Banking**
This course focuses on the role of money, credit and banking in the American economy. Special emphasis is placed on the applicability of monetary policy to the problems of economic stability.
*Prerequisite: EC 100.*

**EC 150** **3 cr. 3 hr.**
**Economic Development**
This course examines the problems of growth with particular reference to less developed countries; topics of discussion include population, income growth, capital formation, unemployment, foreign investment and aid, and the role of government. Investigation through case studies is emphasized.
*Prerequisite: EC 100.*

**EC 160** **3 cr. 3 hr.**
**Public Finance**
This course studies the principles of governmental expenditures and revenues. Attention is also devoted to the problems of public debt, fiscal policy, and inter-governmental fiscal relations, with particular reference to the United States.
*Prerequisites: EC 100 and EC 120.*

**EC 300** **3 cr. 3 hr.**
**History of Economic Thought**
This course covers the work of the great economists within the framework of understanding the relationship between history and economic thought. From the roots of economic thought in the works of the merchantilists and physiocrats, the course turns to the giants in political economy: Adam Smith, David Ricardo, Karl Marx, Alfred Marshall, J. M. Keynes.
*Prerequisite: EC 100.*

**EC 320** **3 cr. 3 hr.**
**Comparative Economic Systems**
This course studies the different economic systems operational in the world today. Emphasis is on differences between market or capitalist systems and socialist systems. The centrally planned economies are considered as well as the social democratic economies of Northern Europe.
*Prerequisite: EC 100.*

**EC 340** **3 cr. 3 hr.**
**Human Resource Economics**
Labor market and employment analysis are the focus of this course which covers the structure of labor markets, the education and

training of the labor force, and manpower programs. The serious problems of unemployment, underemployment, discrimination and barriers to job entry are also discussed.
*Prerequisites: EC 100 and EC 120.*

**EC 350** **3 cr. 3 hr.**
**Urban Economics**
This course is an historical and economic explanation of the growth of cities as well as a theoretical analysis of their location, form, and economic structure. Current urban problems are also discussed.
*Prerequisites: EC 100 and EC 120.*

**EC 355** **3 cr. 3 hr.**
**International Economics**
This course explores the theories of international trade and finance, and their links to theories of economic development. Major current topics in the international economy, including economic competition among developing countries, debt problems in the Third World, and North-South relations, are treated as practical issues against which the theories can be tested.
*Prerequisites: EC 100 and EC 120.*

**EC 365** **3 cr. 3 hr.**
**Intermediate Macroeconomics**
As a second course and more advanced treatment of macroeconomics, this course provides a detailed examination of major topics in macroeconomics, including theories of consumption, investment, and growth and recession, and efforts by the government to stabilize the economy through fiscal, monetary, or other measures. This course introduces the Keynesian, neo-classical, and Marxian models of the macroeconomy.
*Prerequisites: EC 100 and EC 120.*

**EC 366** **3 cr. 3 hr.**
**Intermediate Microeconomics**
This course analyzes consumer and producer equilibrium in a market economy. The behavior of firms in the four market structures and the behavior of firms and individuals in input markets are examined. Applications of economic theory to concrete economic problems are emphasized.
*Prerequisites: EC 100 and EC 120.*

**EC 370** **3 cr. 3 hr.**
**Econometrics**
This course is an introduction to econometric methods, statistical inferences and testing hypotheses. Model building techniques and their theoretical justification are presented and evaluated in terms of their performance.
*Prerequisites: EC 100; EC 120, MA 220; MA 280.*

**EC 490** **3 cr. 3 hr.**
**Independent Study in Economics**
Open to students who have the permission of the supervising instructor and the department. Course of study, meetings, and credit by arrangement.

**EC 493** **3 cr. 3 hr.**
**Topics in Economics**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under this title.

# Education

Chairman: *George Miller*

Professors:
*Patricia Barbaresi*
*Howard Kingsley*
*Robert Lee*
*Elizabeth Ross*

Assoc. Professors:
*Anne Green*
*Robert Greene*
*George Miller*
*Helen O'Flaherty*
*Judith Schifferle*

Asst. Professors:
*Charles Hetzel*
*Rona Flippo*
*Irene Passios*
*William Strader*

## *Introduction:*

The programs in Education integrate a strong, broad-based grounding in the Liberal Arts with a comprehensive foundation in pedogogy that results in highly competent teachers. The department embraces a humanistic philosophy that emphasizes the importance of meeting the developmental needs and interests of children.

Students must have a 2.0 average to transfer into the program. A 2.5 in the major as well as a positive vote of the education faculty is a pre-requisite to student teaching.

The Early Childhood, Elementary, and Secondary Education Department provides students with five curriculum options leading to the degree of Bachelor of Science in Education:

1/Early Childhood Education (Track I, K-3)

2/Early Childhood Education (Track II-Teacher of Young Children with Special Needs, ages 3-7)

3/Elementary Education (1-6)

4/Middle School Education (5-9)

5/Secondary Education (9-12)

Elementary and Early Childhood Majors may also qualify for Bilingual Certification.

All teacher education candidates must satisfy the Constitution requirement of the Commonwealth of Massachusetts. See, "Common Graduation Requirements..."

Early Childhood Education (Track I, K-3) This track prepares students to become teachers of children in day care centers, nursery programs, kindergartens and first, second, and third grades. A graduate is eligible for Massachusetts certification as an Early Childhood Teacher.

The degree of Bachelor of Science in Education, Early Childhood, must include ED 100, 210, 211, 220, 240, 310, 311, 384, 385, 405; PY 110.

Early Childhood Education (Track II, Teacher of Young Children with Special Needs, ages 3-7)

This track prepares students to become teachers of young children (ages 3-7) who have special needs. Graduates are eligible for Massachusetts certification as a Teacher of Young Children with Special Needs. This program represents the combined resources of the Early Childhood component of the ECES Education Department and the Special Education Department. The selection process for this track takes place near the conclusion of the freshman year. Practicum experiences are required in both a special needs classroom and regular classrooms.

The degree of Bachelor of Science in Education for the Teacher of Young Children with Special Needs must include ED 100, 210, 211, 220, 240, 270, 310, 311, 384 or 385, 405; SE 200, 251, 410, 350 (section II), 388, 390. SE 210 and 340 are recommended for students in ECE Track II.

Elementary Education (1-6) The Elementary Education Program prepares students to become teachers of children in grades one through six. A graduate is eligible for Massachusetts certification as an Elementary Teacher.

The degree of Bachelor in Science in Education, Elementary, must include AR 100 or 120; BI 181; ED 300, 303, 304, 305, 350, 360, 386, 410; EN 290; MA 100 or above, 283; MU 100; PY 110, 221, 275, SE 405.

All elementary majors must select and complete a second academic major or an academic minor or an academic specialization in one of the following areas: Art, Behavioral Sciences, English, Foreign Language, Geography, History, Mathematics, Music, Physical Education, or Science. Requirements for a second academic major or an academic minor are as determined by the respective academic departments. Requirements for an academic specialization are a minimum of 15 semester hours selected from one of the areas listed above in consultation with and with the approval of the ECES Education departmental advisor and the respective academic department. The department requires 15 semester hours in Art, 24 in Behavioral Sciences, 18 in English, 15 in Foreign Languages, 15 in Geography, 15 in History, 21 in Mathematics, 15 in Music, 18 in Physical Education, and 15 in Science.

## *The Minor in Elementary Education*

The minor in Elementary Education consists of 18 semester hours:
ED 300
Principles and Practices of Elementary Education
ED 304
Foundations of Education
ED 303
Reading in Elementary Education
MA 283
Methods and Materials in Elementary Mathematics or
BI 181
Science in Elementary Education

Two of the following courses:

ED 350
Creative Arts in Elementary Education
ED 410
Language Arts in Elementary Education
SE 405
Issues in Mainstreaming

The minor of 18 s.h. is NOT intended to and does *not* meet Massachusetts certification requirements for elementary school teachers.

Before applying for this minor, the student should have successfully completed PY 221 Child Psychology.

Secondary Education (9-12) Secondary Education The Secondary Education Program prepares students majoring in Biology, English, Geography, History or Mathematics to become secondary school teachers in grades nine through twelve. Graduates are eligible for Massachusetts Certification as a Teacher of Biology (9-12),

Earth Science (9-12) English (9-12), Geography (9-12), History (9-12), or Mathematics (9-12).

The course requirements for the degree of Bachelor of Science in Education, Secondary, in Biology, English, Geography, History, and Mathematics are to be found under each of the above majors in this catalog.

## *The Minor in Secondary Education*

The minor in Secondary Education consists of 30 semester hours as follows:

PY 223
Adolescent Psychology
ED 301
Successful Practices in Secondary Education
EN 470
Teaching Writing to Secondary Students
ED 364
Reading in the Secondary School
(English majors only)
PY 275
Tests and Measurements
BI 485, EN 485, GE 485, MA 485 or
ED 485
Special Methods of Teaching in the Modern Secondary School
BI 486, 487
Biology Student Teaching
EN 486, 487
English Student Teaching
GE 486, 487
Geography Student Teaching
GE 488
Student Teaching in Earth Science
ED 486, 487
History Student Teaching
MA 486, 487
Math Student Teaching

The minor of 30 s.h. does meet Massachusetts certification requirements for secondary school teachers. It includes all of the various departmental requirements of our secondary majors. The student is eligible for Massachusetts certification to teach in grades 9-12 in Biology, English, Geography, History, or Math. Because these programs have been approved by the Massachusetts Board of Education graduates are assured initial certification upon application in states under the Interstate Certification Compact.

**ED 010** **1 cr. 3 hr.**
**Personal Reading Improvement**
Individualized reading programs are tailored to meet the particular needs of each student. Students experiencing difficulty in understanding what they read engage in programs stressing comprehension skills.

Students with good comprehension but with slow reading rates receive assistance in acquiring skills to at least double their speed. Additionally, all students are given instruction in reading at different rates for different purposes.

Students are free to select any three hours in the week-from 8:30 a.m. to 4:30 p.m. One credit per semester.

**ED 020** **1 cr. 2 hr.**
**Personal Reading Improvement II**
Continuation of Personal Reading Improvement I.

**ED 100** **4 cr. 5 hr.**
**Early Childhood Foundations**
This course gives a brief orientation on the developmental philosophy and goals of early childhood education. Students will consider educational procedures used in facilitating the development of the child, explore the role of the teacher, the environment and the appropriate instructional strategies used with young children. Required of all Early Childhood majors.

**ED 210** **4 cr. 5 hr.**
**Reading in Early Childhood Education**
The reading process and factors influencing the development of reading will be examined. Prereading and reading skills will be identified and techniques for assessment of skills will be presented. Methods and materials for teaching primary reading will be discussed and illustrated. A practicum in the reading area is required.
*Prerequisite: ED 211.*

**ED 211** **4 cr. 5 hr.**
**Behavioral Science in Early Childhood I: Child Development and Observation**
This course includes a study of principles, patterns, and theories of human development and learning as well as principles and techniques of naturalistic and standardized child study. Observation, recording, synthesis, and interpretation of the behavior of young children will occur within a practicum setting. Case studies will be written. Required of Early Childhood majors.
*Prerequisite: General Psychology or Introduction to Psychology. Required for ED 311.*

**ED 220** **4 cr. 5 hr.**
**Language Arts in Early Childhood Education**
This course covers an examination of the four components of verbal communication-

listening, speaking, reading, writing; current materials and programs for developing language; use of literature in language and concept development; practicum for application of learning.

**ED 240** **4 cr. 5 hr.**
**Fine Arts in Early Childhood Education**
This course studies the integration of art, music and movement for young children using an interdisciplinary approach. Investigation of the objectives, methods and materials in the fine arts is conducted.

**ED 250** **4 cr. 5 hr.**
**Pre-Kindergarten Clinical**
This course provides an opportunity for those interested in working with prekindergarten age children to create a learning environment using will be explored.

**ED 270** **4 cr. 5 hr.**
**Parent-Child Relations in Education**
This course explores the role of the parent in the development of the child and how the parent relates to the educational system. This course will stress awareness of how parents stimulate the growth of behavioral trends in their children, as well as their usefulness as resources to improve the educational environment of the child.
*Prerequisite: ED 211 or Child Development.*

**ED 280** **15 cr. 45 hr.**
**Integrated Creative Arts Teacher Education Program**
This is a full-semester experience which includes five weeks of classroom instruction and training (creative work in visual arts, language arts, movement, music, and integrating art forms). Subsequent to the initial period, students will be placed in field stations for classroom experiences for the remainder of the semester. These activities will involve assisting teacher-specialists in one or more of the art form areas,and the development and implementation of programs for the specific classroom and its pupils so as to foster the pupils personal expression through creation in the arts.

A weekly seminar on Wednesday afternoons from 1:00 to 3:00 will be held at the College for the purposes of workshop experiences and problem solving. Students are expected to be present in the school throughout the semester. They will be visited and evaluated regularly by College faculty as well as by cooperating teacher-specialists in the schools.

**ED 300** **3 cr. 3 hr.**
**Principles and Practices of Elementary Education**
This course includes an examination of the theoretical and practical knowledge of the teaching/learning process. Students demonstrate competencies in the areas of planning, curriculum design, and evaluation. Focus is placed on the needs and learning styles of the elementary school child and the instructional strategies used to effectively meet those needs. In addition, classroom management skills and techniques are emphasized. A field experience is an integral part of the course.
*Prerequisite: PY 221.*

**ED 301** **3 cr. 3 hr.**
**Successful Practices in Secondary Education**
This course provides an opportunity to experience many teacher roles at the secondary school level. The student serves as a tutor in a public school, develops curriculum and instructional material, and designs, presents, and critiques a micro-lesson.

**ED 303** **3 cr. 3 hr.**
**Reading in Elementary Education**
This course includes an examination of the reading process, methods of evaluation and strategies for reading. Reading skills and procedures for developing these skills are examined and current approaches to the teaching of reading are evaluated. The student will be made cognizant of methods of grouping and evaluation procedures. A practicum is required.
*Prerequisite: PY 221, Ed 300.*

**ED 304** **3 cr. 3 hr.**
**Foundations of Education**
This course covers a study of the professional aspects of teaching, the school's role in society, the organization and support of American education, the historical foundations of education and its philosophical bases. Issues affecting curriculum development and the future of American education are considered.

**ED 305** **3 cr. 3hr.**
**Reading Diagnosis and Remediation**
This course provides students with the competencies necessary to diagnose reading abilities and to develop reading proficiency in their own future classrooms, and the skills of administering, scoring, and analyzing Informal Reading Inventories. The student will test a child, plan a program of instruction for that child, and instruct the child based on the diagnosis and instructional

plan. Emphasis is also placed on the development and utilization of assessment strategies, instructional techniques, and instructional activities specific to the needs and interests of the child.
*Prerequisite: ED 210 and ED 303.*

**ED 306** **3 cr. 3 hr.**
**Methods and Materials in Early Childhood Education**
This course includes a hands-on workshop and exploration of all areas of the curriculum. In doing so students will research and prepare games and devices appropriate to an early childhood classroom. Elective for all education majors.

**ED 310** **4 cr. 5 hr.**
**Science, Math, and Social Studies in Early Childhood Education**
Emphasis is placed on the development and demonstration of instructional techniques and materials in science, math, and social studies that are appropriate for heterogeneous groups of young children.

**ED 311** **4 cr. 5 hr.**
**Behavioral Science in Early Childhood II: Learning and Assessment**
This is a continuation of ED 211. (ED 211 and ED 311 cannot be taken simultaneously.)

**ED 320**
**Middle School Concept**
This course introduces students to the historical development, philosophy, and the competencies needed in the Middle School.
*Prerequisites: Child Psychology*

**ED 330**
**Curriculum and Instruction in the Middle School**
This course introduces students to curriculum development, instructional competencies and appropriate goals and objectives in the Middle School.
*Prerequisites: Child Psychology*
*Middle School Concept*

**ED 340**
**Reading in the Middle School**
This course imparts appropriate knowledge and competencies in reading at the Middle School level.
*Prerequisites: Child Psychology*
*Middle School Concept.*

**ED 350** **3 cr. 3 hr.**
**Creative Arts in Elementary Education**
Students will experience the analogous elements of the arts in a series of workshops. Students will then devise lessons which they will present in class for evaluation and use in a practicum.

**ED 360** **3 cr. 3 hr.**
**Social Studies in Education**
This course equips the future teacher with the knowledge, teaching stratyegies and sequential course development necessary to teach this critical area in the elementary school.
*Prerequisite: ED 300*

***ED 364** **3 cr. 3 hr.**
**Reading in the Content Areas**
This course includes investigation of the reading process, discussion of current evaluative methods, analysis of reading strategies, and procedures for development.
*Prerequisites: PY 223, ED 301.*

**ED 370** **3 cr. 3 hr.**
**Using Computers in Classrooms**
Students will examine the philosophy, theory, and application of the use of computers in classrooms. A significant portion of class time will be devoted to "hands on" experiences with Apple II computers. These experiences will include programming in text and graphics mode, an introduction to the nature and use of LOGO, the use of printers and color plotters, the development of programs designed to enhance the learning abilities of children, and the evaluation of educational software. No prior computer experience is assumed.

**ED 400** **3 cr. 3 hr.**
**Analysis of Reading Problems**
The course will examine the correlates of reading problems, identify principles of diagnosis, and analyze, administer and interpret formal diagnostic tests. Students will demonstrate competency in preparing a case study report.
*Prerequisite: ED 210 or ED 303.*

**ED 405** **4 cr. 5 hr.**
**Senior Seminar in Early Childhood**
This course covers an examination of the historical perspectives and philosophical orientations in the field of early childhood education. Specific attention is given to an analysis of current issues and programs. Practicum experiences will be required. Required of Early Childhood majors.

**ED 410** **3 cr. 3 hr.**
**Language Arts in Education**
This course provides students with an introduction to the nature of language and language growth. Emphasis is placed on the meaning and importance of language arts as

well as focusing on the characteristics of elementary school age children that affect and are affected by the language arts program. Stress is placed on elements of writing, speaking, listening, spelling and handwriting. A field experience is an integral part of the course.
*Prerequisite: ED 300.*

***ED 478** **3 cr. 3 hr**
**Introduction to Learning Disabilities**
This course includes a study of some of the causes of school learning disabilities at the Elementary level. Specific techniques and remediation exercises will be discussed.

**ED 480** **3 cr. 3 hr.**
**Special Methods in Teaching of History**
Special techniques for the teaching of history and their relationship to the principles of general methods.
*Prerequisites: ED 301. If HI 485 is not offered when needed, ED 485 meets the same requirement.*

**ED 485**
**Special Methods for Teaching in the Modern Secondary School**
Methods and philosophical background for teaching in the modern secondary and/or middle schools of today, includes a survey of current school curricula in the various disciplines, planning communication skills, management strategies, providing for special needs, review of relevant literature and/or research, development of teaching skills, techniques of teaching in the special subject field of the student, and an overview of school law as it pertains to teachers and students. This course, or the specific course if sufficient numbers, is a prerequisite for student teaching and should be taken the semester prior to student teaching. Students will meet for three hours per week with the instructor and in addition there will be a field experience requirement in keeping with current Massachusetts certification regulations. The field experience component will provide the student with the opportunity to meet with the respective clinical professor for their discipline by arrangement for a minimum of six weeks for at least one hour per week.

**ED 486, 487**
**Student Teaching in History**
Student Teaching Practicum in history. Students are assigned to cooperating schools for a semester of student teaching.

**ED 488, 489**
**Student Teaching in Elementary Education**
Student Teaching Practicum in Elementary. Students are assigned to cooperating schools for a semester of student teaching.

**ED 490, 491**
**Student Teaching in Early Childhood Education**
Student Teaching Practicum in Early Childhood. Students are assigned to cooperating schools for a semester of student teaching.

**ED 498** **3 cr.**
**Independent Study in Education**
This course provides students in early childhood, elementary, and secondary education with the opportunity to do research with staff guidance in a problem in education. It is limited to juniors and seniors
*Prerequisite: permission of Department.*

**ED 499** **3 cr. 3 hr.**
**Topic in Education**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under this title.

# English

Chairman:
*Lawrence Quigley*

Professors:
*William Barker*
*Judith Budz*
*Terry Grabar*
*Leo Hines*
*William Keough*
*Marilyn McCaffrey*
*Erwin Pally*
*Lawrence Quigley*

Assoc. Professors:
*Irene Harris*
*Robert Welch*
*Nancy Yee*

Asst. Professors:
*Colin Bourn*
*George Case*
*Joseph Finkel*
*John McGrail*
*Irene Miranda*
*Thomas Murray*
*Robert Tapply*

## *Introduction:*

The English Department serves all Fitchburg State College students through freshman writing and speech classes and through General Education electives. An English major offers students a well-rounded liberal education. Specialization in writing or in secondary education also prepares students professionally.

## *Majors:*

The Bachelor of Arts in English (Literature) requires English Literature I, II, and III (EN220, 221, 222), Shakespeare (EN402 or 403), American Literature I or II (EN200 or 210), and five literature electives, at least two of them at the 400 level. Second year proficiency in a foreign language is required.

The Bachelor of Arts in English (Professional Writing) requires 36 hours in English including English Literature I, II, and III (EN200, 221, 222), Shakespeare (EN402 or 403), American Literature I or II (EN200 or 210); two 400 level literature electives; Advanced Expository Writing (EN389), and nine hours from the following courses: Journalism (EN280), Journalism Practicum I and II (EN381, 382), Creative Writing (EN380), Writing for Business and Technology (EN386), American Magazine (EN384), Feature and Magazine Writing (EN387).

Also recommended are 6, 9, or 12 hours of internship. *Internship requires Department approval.*

The Bachelor of Science in Education, Secondary, in English requires English Literature I, II, and III (EN220, 221, 222), Shakespeare (EN402 or 403), Literature for Young Adults (EN291), Structure and Nature of Language (EN460), a course in world literature and one in American literature; speech; and Reading in the Content Areas (ED364), Teaching Writing to Secondary Students (EN470), General Psychology (PY110), Adolescent Psychology (PY223), Tests and Measurements (PY275), Successful Practices in Secondary Education (ED301), The Teaching of English (EN485); and at least 6 hours of literature electives in English. One semester of the student's senior year must be devoted to student teaching.

## *Internship:*

The English Department, through its internship program, offers an opportunity for seniors and second-semester juniors to explore a profession for one full semester of work and credit. English majors can experience a wide range of professional activity in fields such as radio, television, journalism, personnel work, library functions (school, public, or technical), public relations, law, government, human services, and technical productions.

New internship positions are identified each semester. The program has provided an unusually high level of job-entry success for those participating. The internship enables students to apply theoretical knowledge and laboratory-developed skills in an actual professional setting. Department approval is required.

## *Minors:*

The Minor in English has two tracks, each requiring 18 hours in English courses.

TRACK A, Concentration in Literature, requires: 6 hours from English Literature I, II, and III (EN 220, 221, 222), American Literature I and II (EN 200, 210); 9 hours in literature electives; 3 additional hours in English.

TRACK B, Concentration in Professional Writing, requires: 6 hours from English Literature I, II and III (EN 220, 221, 222), American Literature I and II (EN 200, 210); Advanced Expository Writing (EN 389); 6 semester hours in advanced writing courses selected from: Journalism (EN 280), Journalism Practicum I and II (EN 381, 382), Creative Writing (EN 380), American Magazine (EN 384), Writing for the Natural and Social Sciences (EN 385), Writing for Business and Technology (EN 386), and Feature and Magazine Writing (EN 387); 3 additional hours in English.

The minor in Irish Studies requires Twentieth Century Irish Fiction (EN 412), Twentieth Century Irish Drama and Poetry (EN 413), Irish History 1798-1850 (HI 250) and Irish History 1850-present (HI 251), and a 3-credit Independent Study project in either Irish Literature or Irish History.

**EN 001**
**Writing Skills Workshop**
An intensive study of the basic writing skills. Cannot be taken simultaneously with either English Composition I or II (EN100, 120). May be taken 3 times for 1 credit per semester.

**EN 010** **3 cr. 3 hr.**
**Basic College Writing**
Study of the process of writing as well as sentence arrangements and punctuation patterns in Edited American English.

**EN 100** **3 cr. 3 hr.**
**English Composition I**
Practice, both oral and written, in expressing ideas with precision, clarity, and economy. The research essay. Critical reading.

**EN 120** **3 cr. 3 hr.**
**English Composition II**
A continuation of EN 100 but more advanced. Careful reading, critical thinking, and analytical writing, with nine papers on poetry, prose, and drama.
*Prerequisite: a passing grade in English Composition I (EN100).*

*Prerequisite for all English electives: English Composition I and II (EN100, 120).*

**EN 200** **3 cr. 3 hr.**
**American Literature I**
Representative American writers from Colonial days through the Civil War.

**EN 210** **3 cr. 3 hr.**
**American Literature II**
Representative American writers since the Civil War.

**EN 220** **3 cr. 3 hr.**
**English Literature I**
British writers from the Old English period through the 16th Century.

**EN 221** **3 cr. 3 hr.**
**English Literature II**
British writers of the 17th and 18th Century.

**EN 222** **3 cr. 3 hr.**
**English Literature III**
British writers of the Romantic, Victorian, and modern periods.

**EN 230** **3 cr. 3 hr.**
**The Handicapped in Literature**
Images of disability as presented in fiction, biography, and autobiography.

**EN 240** **3 cr. 3 hr.**
**World Literature I**
European literary masterpieces from the beginning through the middle of the 17th century.

**EN 250** **3 cr. 3 hr.**
**World Literature II**
European literary masterpieces from the mid-17th century to the present.

**EN 260** **3 cr. 3 hr.**
**The Bible as Literature**
The style, narrative techniques, symbols, and historical setting of the Old and New Testament writers.

**EN 262** **3 cr. 3 hr.**
**Classical Mythology**
Pre-Homeric stirrings of symbol and story; Virgil and Ovid and Roman traditions thereafter.

**EN 265** **3 cr. 3 hr.**
**Other Voices**
Works by significant ethnic writers, including first generation immigrants such as James Farrell, Maxine Hong Kingston, Abram Tertz, Neale Hurston. Workshop approach.

**EN 270** **3 cr. 3 hr.**
**The Short Story**
Significant stories of some of the great writers of the Western world, showing the evolution of the short story form.

**EN 280** **3 cr. 3 hr.**
**Journalism**
Readings in the mass media and individualized writing assignments. Some emphasis on the technical aspects of newspaper work.

**EN 290** **3 cr. 3 hr.**
**Children's Literature**
The content and values of classic children's literature with emphasis on myth and folktales, and attention to the social problems and multi-ethnic concerns of current literature.

**EN 291** **3 cr. 3 hr.**
**Literature for Young Adults**
Wide reading of literature written for the teenager, including science fiction, fantasy, television plays, realistic novels and poetry.

**EN 295** **1 cr. 1 hr.**
**Survey of English Grammar**
Traditional and transformational systems of English grammar as a basis for understanding conventions of English usage.

**EN 300** **3 cr. 3 hr.**
**World Drama**
Significant and representative plays from the beginning to the modern period.

**EN 302** **3 cr. 3 hr.**
**Modern Drama**
The works of such playwrights as Ibsen, Chekhov, Sartre, Brecht, Ionesco, Beckett, and Pinter.

**EN 310** **3 cr. 3 hr.**
**The World Novel to 1914**
Significant novels representing various countries and periods as well as stages in the development of this literary form.

**EN 311** **3 cr. 3 hr.**
**The World Novel Since 1914**
Modern novels are studied both aesthetically and as human documents.

**EN 325** **3 cr. 3 hr.**
**Love and Hate in American Fiction**
American writers and the world of emotions

in The Scarlet Letter, A Farewell to Arms, the Great Gatsby, Deliverance and others.

**EN 330** **3 cr. 3 hr.**
**Women and Literature**
Literature by and about women.

**EN 360** **3 cr. 3 hr.**
**The American Pastoral Spirit**
The countryside as a source of literary inspiration from the Horatian concept of rural retirement to the post-industrialism of the late 20th century.

**EN 380** **3 cr. 3 hr.**
**Creative Writing**
Opportunity for students to write fiction and poetry. *Junior standing or approval of the instructor is required.*

**EN 381 and 382** **3 cr. 3 hr.**
**Journalism Practicum: (P1 and P2)**
Open to members of the Strobe staff and other students engaged in appropriate on-campus or off-campus journalistic activities. (P1 and P2 may be taken separately for a total of 6 credits).
*Prerequisite: Journalism*

**EN 384** **3 cr. 3 hr.**
**The American Magazine**
Close study of significant American magazines: the editorial policies and requirements, audience slant, advertisements, visual layouts.

**EN 385** **3 cr. 3 hr.**
**Writing for the Natural and Social Sciences**
Individualized work in writing, appropriate for those taking courses in physical and life sciences, psychology, human services, and other social sciences.

**EN 386** **3 cr. 3 hr.**
**Writing for Business and Technology**
Writing for students interested in business, industry, and management. Includes business correspondence, descriptions of processes and mechanisms, sets of instructions, proposals, abstracts, reports, etc.

**EN 387** **3 cr. 3 hr.**
**Feature and Magazine Writing**
Writing feature articles for newspaper, magazine and trade journals.
*Prerequisite: Journalism.*

**EN 389** **3 cr. 3 hr.**
**Advanced Expository Writing**
Focused on writing as process, designed to enable student writers to control the broad range of rhetorial principles underlying effective writing in any field. Related grammatical, linguistic, and philosophical questions.

**EN 400** **3 cr. 3 hr.**
**The Middle Ages**
Literature of the British Isles before Shakespeare.

**EN 401** **3 cr. 3 hr.**
**Chaucer and His World**
Emphasis on the Canterbury Tales and their medieval background.

**EN 402** **3 cr. 3 hr.**
**Shakespeare's Drama**
Several history plays as well as one comedy and one tragedy. Emphasis on Shakespeare's interpretation of political life and leadership.

**EN 403** **3 cr. 3 hr.**
**Shakespeare's Thought**
Emphasis on the conception of human destiny in Shakespeare's comedies and tragedies. The plays will be examined for their psychological, philosophical and religious meanings.

**EN 404** **3 cr. 3 hr.**
**Major English Writers of the 17th Century**
The drama of Jonson, Webster, Middleton, Congreve; the poetry of Milton, Jonson, Donne, Herbert, Herrick, Marvell and Dryden; the prose of Browne and Dryden.

**EN 405** **3 cr. 3 hr.**
**The Novel in the 18th Century**
The origins of the novel in England and its development as a reflection of the tastes of a rising middle class. Readings include Defoe, Richardson, Fielding, Johnson, Austen and others.

**EN 406** **3 cr. 3 hr.**
**The Age of Satire: 1700-1750**
Emphasis on the importance to the age of standards in life as well as in literature, the public responsibilities of the writer, and the various ways that humor is used as a weapon for social purposes.

**EN 407** **3 cr. 3 hr.**
**From Classic to Romantic: 1750-1800**
Changing values in philosophy, the nature of man and politics, as well as the reflection of these changes in the art, music, and literature of the late 18th Century.

**EN 408** **3 cr. 3 hr.**
**Romanticism**
Works of writers from Wordsworth through Byron.

**EN 409** **3 cr. 3 hr.**
**The 19th-Century English Novel**
Significant novels demonstrating the changing cultural milieu and varying approaches of the genre during this period.

**EN 410** **3 cr. 3 hr.**
**Victorian Literature**
Man's relationship to a changing society in the face of nineteenth-century industrialization and scientific progress studied in the major writers of the period.

**EN 411** **3 cr. 3 hr.**
**The Last Victorians**
The Wilde 90's, Edwardian exuberance, and World War I collated with modern trends in poetry, prose, and drama.

**EN 412** **3 cr. 3 hr.**
**20th-Century Irish Fiction**
From James Joyce through Brian Moore, including O'Faolain, O'Connor, O'Flaherty, McGahem.

**EN 413** **3 cr. 3 hr.**
**20th-Century Irish Drama and Poetry**
Poets, from Yeats through Montague, Kinsella, Heaney, playwrights, from Synge and O'Casey through Beckett and Friel.

**EN 414** **3 cr. 3 hr.**
**Modern Poetry**
Chief modern poets of America and England.

**EN 415** **3 cr. 3 hr.**
**Mark Twain and American Humor**
Southwestern humor leading up to the writings and career of Mark Twain, and also humorists who share the Twain legacy.

**EN 420** **3 cr. 3 hr.**
**The Romance in America**
Concepts of nature, idealism and community in the works of Hawthorne, Poe, and others.

**EN 421** **3 cr. 3 hr.**
**Major American Writers of the Twentieth Century**
The varied creativity of American writers of fiction, drama, poetry, criticism, and the essay since World War I.

**EN 422** **3 cr. 3 hr.**
**American Novel 1890-1950**
Close examination of several representative works by major American novelists of this period.

**EN 423** **3 cr. 3 hr.**
**American Novel Since 1950**
A close analysis of seven or eight major novels.

**EN 424** **3 cr. 3 hr.**
**Rags to Riches in a Hostile World**
The Horatio Alger hero in American literature.

**EN 425** **3 cr. 3 hr.**
**The Gatsby Myth**
The emphasis on money, love and status in the novels of the 20's and 30's: Fitzgerald, Hemingway, Wolfe and Dreiser.

**EN 426** **3 cr. 3 hr.**
**Journalist to Novelist**
The stylistic and professional development of distinguished American writers who began their careers as reporters.

**EN 450**
**Literary Criticism**
Critical theory and practice from Aristotle through the 20th Century.

**EN 460** **3 cr. 3 hr.**
**The Structure and the Nature of Language**
Language systems and grammatical theories, including the history of the English language, theories of language acquisition, and psycholinguistic and sociolinguistic topics.

**EN 470** **3 cr. 3 hr.**
**Teaching Writing to Secondary Students**
Practice and research in alternatives for teaching writing in secondary schools. Different approaches explored through experiments for the teacher and opportunities to test these approaches in prepracticum experiences.

**EN 485** **3 cr. 3 hr.**
**The Teaching of English**
The methodology of English, including lesson planning, selection of materials, curriculum development, review of relevant research.

**EN 486, 487** **12 cr.**
**Student Teaching in English I & II**
Student teaching practicum. Sturdents are assigned to cooperating schools for a semester of student teaching.

**EN 490** **3 cr.**
**Independent Study**
For English majors excelling in scholarship upon approval of both department chair and advising instructor. Course of study, meetings, and credit by arrangement.

**EN 492** **3 cr. 3 hr.**
**Seminar**
An opportunity for literary analysis and research, topic to be selected by the instructor. Primarily for English majors, with others admitted by permission.

**EN 493** **3 cr. 3 hr.**
**Topics in Literature**
This course serves as a vehicle for curriculum experimentation and enrichment. Topics will be selected by the instructor, usually from work in progress.

**EN 494, 495, 498** **3, 6, 9 cr.**
**Internship**

**EN 496** **12 cr.**
**Internship**
An opportunity to gain valuable on-the-job experience for college credit by spending one semester (full-time) in business or industry. Students are placed in a field of their choice where they can use their abilities as communicators, learn new skills and sample a potential job market. An internship is a recommended component of the English Department Writing Track. *Department approval and junior/senior standing required.*

# Environmental Science

Coordinator:
*Howard Thomas*

The Bachelor of Science in Biology/ Environmental Science includes all requirements of the Bachelor of Science in Biology. Additional requirements are six semester hours of earth science or geology, a course in computer science, ES 100, ES 480, and three semester hours of electives in Environmental Science. The major recommends that the General Education social sciences requirement be partially fulfilled by courses in geography, macroeconomics, environmental law and urban planning; and that courses in photography, drawing, ethics and technical writing be used to fulfill the humanities requirement in General Education.

Since not all courses are offered in any one year, the student interested in Biology/ Environmental Science is urged to consult closely with his/her advisor to design in advance a suitable selection and sequence of both required and elective courses.

*An asterisk indicates that the course is offered infrequently.

***ES 100** **1 cr. 1 hr.**
**Seminar in Environmental Science**
Survey of the practical scope of environmental science with special reference to the variety of activities performed by environmental scientists and the academic preparation and performance expected by potential employees. Relevance of various disciplines to career preparation, Lectures, films, visits to private and governmental agencies, seminars and symposia.

**ES 200** **3 cr. 3 hr.**
**Adaptations**
The human organism is examined in terms of its adaptation to acute and chronic stress. Physiological responses to such stressors as exercise, heat, and dark, altitude and nutrition are studied theoretically and in a laboratory setting.

**ES 490**
**Independent Study**
Open to students who have permission of the supervising instructor and the department. Course of study, meetings, and credit by arrangement.

***ES 493** **3 cr. 3 hr.**
**Topics in Environmental Science**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under this title.

**ES 494, 495, 496** **3, 6, 12 cr.**
**Internship in Environmental Science**
Work experience in private or governmental concerns. Offered: Fall and Spring semesters. Assignments depend on needs of participating organization and the interests and abilities of the student.
*Prerequisites: Junior or senior standing and permission of the Environmental Science Committee.*

# French

Chairman:
*Richard DeCesare*

Assoc. Professor:
Jeanne Hambright

## *The Minor in French*

The minor in French will require a minimum of 15 semester hours. Students must take Intermediate French I and II or be able to demonstrate proficiency at that level. Elementary French will not count toward the minor. After demonstrating intermediate level competency, the student may take a combination of courses in French literature, composition, or culture which will yield the requisite 15 hours of credit. For those

students starting French above the intermediate level, FR 490 Advanced French Independent Study, may be repeated for credit.

**FR 100** **3 cr. 3 hr.**
**French for Beginners I**
Correct pronunciation, reading ability and fundamentals of grammar and syntax. French gradually becomes the working classroom language. For students with no language experience or less than two years high school level. Students with two or more years not admitted without permission of instructor.

**FR 110** **3 cr. 3 hr.**
**French for Beginners II**
A continuation of FR 100.

**FR 200** **3 cr. 3 hr.**
**Intermediate French I**
Conversation practice; readings stressing life, customs and culture of France.
*Prerequisite: two years of high school, French II and/or Instructor's permission.*

**FR 210** **3 cr. 3 hr.**
**Intermediate French II**
A continuation of FR 200.

**FR 288** **3 cr. 3 hr.**
**Methods for Teaching French in the Elementary School**
Techniques and materials for use in elementary school. Required for foreign language specialization. Minimum of 12 semester hours of French or its equivalent and Instructor's permission is required.

**FR 300** **3 cr. 3 hr.**
**French Civilization**
The history, geography, fine arts and literature of the French people from the earliest times through today. Extensive readings in French.
*Prerequisite: FR 210 or instructor's permission.*

**FR 330** **3 cr. 3 hr.**
**French Literature I**

**FR 340** **3 cr. 3 hr.**
**French Literature II**
A continuation of French Literature I including literature of the 19th and 20th centuries.

**FR 350 French Conversation and Composition**
For students desiring greater fluency in speech and writing. Recommended for civilization and literature courses.
*Prerequisite: FR 210 or instructor's permission.*

**FR 490** **3 cr. 3 hr.**
**Advanced French Independent Study**
*Prerequisite: Minimum of 12 semester hours, 2.0 grade-average in French, and permission of Instructor, Department Chairman.*

**FR 493** **3 cr. 3 hr.**
**Topics**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under this title.

# Geography/ Earth Science

Professors:
*James Barbato*
*Robert Champlin*
*Robert Gardula*

The degree of Bachelor of Science and Bachelor of Arts in Geography each require a minimum of 36 semester hours of course work, including GE 100 and the remainder chosen from among courses in the following areas: Earth and or Environment Science, Urban-Community development and/or Public Service, or Area Development. Courses are structured so as to prepare the student for employment or graduate work. The Bachelor of Arts degree requires foreign language proficiency at the second year college level.

The degree of Bachelor of Science in Education, Secondary, in Geography must include GE 100, 488; PY 110, 223, 275; ED 301, EN 470, GE 498 or 499; and 27 semester hours in Geography electives. Students may meet the state certification requirement for teaching Earth Science, as well as Geography, by taking 30 semester hours in related courses which should be chosen after consultation with a member of the geography faculty.

The Minor in Geography consists of GE 100, Introductory Geography, and five additional geography courses chosen in conjunction with one of the geography/earth science faculty.

**GE 100** **3 cr. 3 hr.**
**Introduction to Geography**
The interrelationships between the physical and cultural elements of man's environment.

**GE 110** **3 cr. 3 hr.**
**Principles of Human Geography**
An introduction to the elements and processes underlying economic, social, and political geographic patterns, with applications to actual case studies and situations.

## *Physical, Earth, and Environmental Courses*

**GE 130** **3 cr. 4 hr.**
**Earth, Sea and Air**
Selected topics from the earth sciences. A laboratory science.

**GE 210** **3 cr. 4 hr.**
**Geology**
An introductory survey of the basic elements of physical and historical geology. Laboratory required. Open to all students. GE 100 strongly suggested.

**GE 325** **3 cr. 4 hr.**
**Introduction to Historical Geology**
This course studies the physical history of the earth based on evidence from the rock and fossil record from the early Paleozoic Era through the present. The evolution of life forms, subjective and absolute dating methods, fossil identification and fossil evidence supporting plate tectonic theory are some of the topics studied. Laboratory required.
*Prerequisite: GE 210 or permission of Instructor.*

## *Methods and Techniques*

**GE 280** **3 cr. 3 hr.**
**Map Use and Interpretation**
This course considers the nature and role of maps in communicating aspects of the earth's natural and human environments. Involved are: a) Map Reading: relating map symbols to real-world features, b) Map Analysis: extracting information from maps, and c) Map Interpretation: seeking explanations for environmental patterns depicted in a maps system of symbolization.

**GE 300** **3 cr. 3 hr.**
**Economic Geography**
Analysis of factors underlying the spatial distribution of primary, secondary, and tertiary economic activities, with emphasis on locational processes in commercial economics.

***GE 310** **3 cr. 3 hr.**
**Political Geography**
Dependent and independent political units, boundary disputes, strategic areas, buffer zones and the function of international organizations.

**GE 327** **3 cr. 4 hr.**
**Common Rocks and Minerals**
Major rock and mineral types will be studied. Considerable time will be spent on field and laboratory identification techniques. Mineral crystal systems and rock and mineral forming processes will also be studied.

**GE 340** **3 cr. 3 hr.**
**Population Geography**
Deals with selected demographic processes and population characteristics relative to resources in economically underdeveloped countries and regions. Involves both a systematic and regional view of world population problems.
*Prerequisite: GE 210 or CH 110.*

**GE 480** **3 cr. 4 hr.**
**Cartography**
Treats the principal aspects of cartography as a communication process. Considers the nature and purpose of mappable information, elements of map design, and methods involved in map construction.

**GE 400** **3 cr. 4 hr.**
**Atmospheres I-Meteorology**
Fundamental principles of weather systems. Emphasis will be on mid-latitude phenomena and weather forecasting. Topics in tropical meteorology and severe storm phenomena will be discussed. Laboratory required.

**GE 410** **3 cr. 4 hr.**
**Atmospheres II-Climatology**
Regional differentiation of the climatic zones of the major land and ocean areas of the world. Special attention will be given to urban climatology and the energy and moisture climatology of the earth.
*Prerequisites: GE 400 Meteorology or permission of the Instructor.*

**GE 411** **3 cr. 3 hr.**
**Atmospheres III-Planetary Atmospheres**
This course seeks to explain the similarities and differences between the earth's atmosphere and the atmospheres of the planets and moons in our solar system. Each atmosphere will be studied to determine its chemical composition, thermal structure, energy budget, pressure, wind systems, clouds, precipitation and other pertinent meteorological phenomena.
*Prerequisite: GE 400.*

**GE 420** **3 cr. 4 hr.**
**Geomorphology**
A comprehensive study of land forms and their origins.
*Prerequisites: GE 210 Geology or permission of the Instructor.*

**GE 430** **3 cr. 4 hr.**
**Oceanography**
A study of the physical and chemical properties of sea water, atmosphere interaction with the sea surface, currents and volume flow, the energy budget of the oceans, the submarine geology of the ocean basins including a thorough discussion of ocean floor spreading, and coastal processes.

**GE 440** **3 cr. 3 hr.**
**Urban Geography**
Analysis of the external relationships and internal structure of cities, with emphasis on the spatial attributes of contemporary urban qualities and problems in America. Classroom activities are supplemented by applied studies in the greater Fitchburg-Leominster area.

**GE 450** **3 cr. 4 hr.**
**Remote Sensing of the Environment**
Techniques in the use of maps, satellite and aerial imagery as applied to landscape analysis and resource management.
*Prerequisite: GE 210.*

**GE 460** **3 cr. 4 hr.**
**Selected Topics in Environmental Geology**
Basic principles of geology and geomorphology will be applied to the study of environmental problems caused by such natural phenomena as earthquakes, landslides, flooding, groundwater contamination, pollution, pollution caused by the mining and use of fossil fuels, etc. Data from actual events will be studied and utilized when considering the special problems these natural events cause to man.
*Prerequisites: GE 210 or GE 420 or the equivalent.*

**GE 470** **3 cr. 3 hr.**
**Geographic Perspectives on Conservation**
An analysis of natural resources problems arising from changes in technology, population pressure, and concern with the quality of environment.
*Prerequisite: GE 100.*

**GE 482** **3 cr. 3 hr.**
**Advanced Cartography**
Emphasis on concepts and techniques involved in a variety of mapping problems. Assigned projects will incorporate various methods of data presentation and compilation, as well as map design and symbolization.

**GE 485** **3 cr. 3 hr.**
**Special Methods in Teaching Geography/Earth Science**
Lesson planning, selection of materials, curriculum development, review of relevant research.
*Prerequisites: EN 470 and ED 301.*

**GE 494, 495, 496** **3, 6, 12 cr.**
**Internship in Geography**
Work experiences in private and governmental concerns. Assignments depend on the needs of the participating agency and interests and vocational objectives of the student.
*Prerequisites: Junior or Senior standing and permission of Internship coordinator.*

**GE 490 Independent Study in Geography**
Provides exceptional students the opportunity of research with faculty guidance in a subject or problems of geographic significance.
*Prerequisites: 12 hrs. of Geography and permission of Instructor. Hours and credit by arrangement.*

**GE 493** **3 cr. 3 hr.**
**Topics in Geography**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under this title.

**GE 486, 487** **12 cr.**
**Student Teaching in Geography**
Student Teaching Practicum in geography. Students are assigned to cooperating schools for a semester of student teaching.

**GE 488** **12 cr.**
**Student Teaching in Earth Science**
Student Teaching Practicum in earth science. Students are assigned to cooperating schools for a semester of student teaching.

U.S. and Foreign Area Studies Regional and systematic analysis based upon geographic elements influencing domestic evolution and international relations.
*Prerequisite: GE 100.*

**GE 320** **3 cr. 3 hr.**
**U.S. and Canada**
U.S. and Foreign Area Studies Regional and systematic analysis based upon geographic elements influencing domestic evolution and international relations.
*Prerequisite: GE 100.*

# German

Chairman:
*Richard DeCesare*

Professor:
*John Burke*

Assoc. Professor:
*Jeanne Hambright*

The Minor in German The minor in German will require a minimum of 15 semester hours. Students must take Intermediate German I and II or be able to demonstrate proficiency at that level. Elementary German will not count toward the minor. After demonstrating intermediate level competency, the student may take a combination of courses in German literature, composition, or culture which will yield the requisite 15 hours of credit. For those students starting German above the intermediate level, GR 490 Independent Study, may be repeated for credit.

*Asterisk indicates that the course is offered infrequently.

**GR 100** **3 cr. 3 hr.**
**German for Beginners I**
Correct pronunciation, reading ability, and fundamentals of grammar and syntax. German gradually becomes the working classroom. Use of German Language films, cassettes, and utilization of Apfeldeutsch, a computer course for German. Students with two or more years not admitted without permission of the instructor.

**GR 110** **3 cr. 3 hr.**
**German for Beginners II**
A continuation of German 100.

**GR 200** **3 cr. 3 hr.**
**Intermediate German I**
Conversation and laboratory practice; readings stress the life, customs, and culture of Germany.
*Prerequisite: Two years of high school German or GR 100 and GR 110.*

**GR 210** **3 cr. 3 hr.**
**Intermediate German II**
Continuation of GR 200.

***GR 300** **3 cr. 3 hr.**
**German Civilization**
The history, geography, fine arts and literature of the German people from earliest times to the present. Extensive readings in German.
*Prerequisites: GR 210 or permission of the Instructor.*

***GR 330** **3 cr. 3 hr.**
**German Literature**
Representative works of German literature from the Niebelungenlied to the Tin Drum. Conducted in German.
*Prerequisites: GR 210 and/ or Instructor's permission.*

***GR 350** **3 cr. 3 hr.**
**German Conversation and Composition**
This course is designed to increase the student's ability to write and speak German. Students will be expected to write compositions on topics developed orally in class.
*Prerequisites: GR 210 or permission of the Instructor.*

***GR 360** **3 cr. 3 hr.**
**Modern German Literature in Translation**
An introduction to the varied creativity of German writers of fiction, drama, and poetry of the 20th century. The German film contribution of the 1920's with feature-length films will be included. Readings will be in translation and the course will be conducted in English.

***GR 370** **3 cr. 3 hr.**
**Modern German Culture: "The Road to Hitler"**
Given in English. An examination of the cultural factors in music, art, literature and film which illuminate the events leading to National Socialism. Readings will focus on translated materials especially in literature which help to explain why the Germans embraced Adolph Hitler. Includes a significant audio-visual component.

**GR 490** **3 cr. 3 hr.**
**Independent Study in German**
Open to students in the language with the permission of the supervising instructor and the Department Chairman. Meeting times and credit by arrangement.

**GR 493** **3cr. 3hr.**
**Topics in German**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may be taught in an experimental basis under this title.

# Graphics

*Departments of Computer Science, Communications Media, Industrial Technology*

Graphics is an interdisciplinary subject area with applications in Computer Science, Communications/Media and Industrial

Technology. The Interdisciplinary Graphics Minor develops an appreciation for all three areas while concentrating in one of the areas. Students gain a theoretical background in Computer Science, a design/applications background in Communications/Media and a production background in Industrial Technology.

**Required Courses:**

CS 150 Introduction to Pascal
CM 381 Graphic Design I
IT 150 Graphic Arts Processes or
CM 391 Graphic Arts Production
CS/CM/IT Interdisciplinary Graphics Seminar

A concentration (2 courses) in one of the following areas: Note: Students must select a concentration in a department outside their major field of study.

*Concentration in Computer Science:*

CS 155 Data Structures
CS 220 Computer Graphics for Non-majors (Pascal)

*Concentration in Communications/Media:*

CM 389 Electronic Graphic Design
CM 382 Graphic Design II

*Concentration in Industrial Technology:*

IT 241 Automated Drafting Systems
IT 250 Offset Lithography or
IT 353 Typography I

# History

Professors:
*Lawrence Arnold*
*Pasquale Micciche*
*John Moon*
*Donald Norton*
*Edmund Thomas*

Asst. Professors:
*Norman Carson*
*Douglas Hebb*

The Bachelor of Science and Bachelor of Arts in History must include HI 110, 112, 210, 220, 400; one course from HI 180, 190, 407, 408, 260, 460, 481 or 482; one elective from European History; one elective from U.S. History; and an additional 6 semester hours of History electives. The Bachelor of Arts requires foreign language proficiency at the second year college level.

All B.A. and B.S. candidates must have a concentration in a subject area outside of history. This concentration will be constructed with the approval of the student's departmental advisor. Fifteen semester hours are required for a concentration. Recognized minors in other disciplines may be substituted for the concentration. A Bachelor of Arts in History with a concentration in European Studies must include HI110, 112, 210, 220, 400 and 12 semester hours of History electives of which at least 9 semester hours are in European History and 15 semester hours of related courses of which at least 3 semester hours each in the areas of Geography, Art, Philosophy and Literature. The latter courses must be chosen from the list of courses applicable to the European Studies concentration. This degree must also include proficiency in a modern European language at the third year college level.

A Bachelor of Science in Education, Secondary, in History must include PY110, 223 and 275; HI110, 112, 210, 220, 400; one course from HI180, 190, 407, 408, 460, 260, 481, and 482; one elective from European History; one elective from U.S. History; and an additional 9 semester hours of History. The major must also include ED301, ED480 or HI485, ED486, ED487, and EN470. 36 hours in history are required for Commonwealth of Mass. certification, with at least one course in non-Western area (e.g., Russia, Far East, Latin America).

## *The Minor in History 18 cr.*

A student may complete a minor in history by taking 18 semester hours of history. Emphasis in the minor may be either on European History or American History (including Latin American History).

## *Minor in History with European Emphasis*

1. HI 112 Modern European History II

2. Either HI 210 or 220

3. Four additional courses in European History. (HI 490, Independent Study in History, may be used to fulfill 3 semester hours of this requirement provided the topic is one in European History.)

## *Minor in History with American Emphasis*

1. HI 220 United States History II

2. Either HI 110, 112 or 130

3. Four additional courses in United States or Latin American History. (HI 490,

Independent Study in History, may be used to fulfill 3 semester hours of this requirement provided the topic is one in United States or Latin American History.)

## *The Minor in Irish Studies* *15 cr.*

HI 250 Irish History 1798-1850
HI 251 Irish History 1850-present
EN 412 Twentieth Century Irish Fiction
EN 413 Twentieth Century Irish Drama and Poetry

The remaining 3 semester hours must be completed by taking a 3 semester hour Independent study project in either Irish History or Literature.

*Asterisk indicates that course is offered infrequently.

**HI 110** **3 cr. 3 hr.**
**Modern European History I**
The evolution of modern European ideas and institutions from the Renaissance to the Napoleonic era. Political events, selected biographies, topics in cultural history, and economic and social changes.

**HI 112** **3 cr. 3 hr.**
**Modern European History II**
Political developments, ideologies such as socialism and nationalism, the impact of science and technology, and the changing relationship of Europe to Africa and Asia.

**HI 130** **3 cr. 3 hr.**
**Medieval Europe**
Major characteristics and institutions of medieval civilization. Within a chronological framework of political events, attention is given to topics in art, literature, philosophy, and religion.

**HI 140, 150** **3 cr. 3 hr.**
**British History** **each semester**
The first semester covers the development of English government and culture from the earliest times to the reign of Queen Elizabeth I. The second semester covers from 1603 to the present with emphasis on parliamentary government, the industrial and agricultural revolutions, the evolution of the British Empire and Commonwealth, and the position of Britain today.

**HI 180** **3 cr. 3 hr.**
**History of Mexico, Central America and the Caribbean**
Both HI 180 and 190 survey pre-Columbian and colonial backgrounds, the clash and fusion of cultures, and the evolution of today's Latin American civilizations as they relate to specific geographical areas.

**HI 190** **3 cr. 3 hr.**
**History of South America**
See HI 180.

**HI 210, 220** **3 cr. 3 hr.**
**United States** **each semester**
**History I and II**
A survey of the United States History beginning with colonial times and continuing through the era of Reconstruction following the Civil War the first semester. The second semester covers from Reconstruction to the present.

**HI 230** **3 cr. 3 hr.**
**American Women, 1870-1970**
Women in America, the struggle against discrimination and for the ballot, the history of various women's groups, including working class, black, and immigrant women. Not merely the study of exceptional women but women as housewives, breadwinners, and citizens.

**HI 250** **3 cr. 3 hr.**
**Irish History, 1798-1850**
The Rebellion of 1798 and the Act of Union; O'Connell and Catholic emancipation; the rise of Irish nationalism, the great famine of 1845-50.

**HI 251** **3 cr. 3 hr.**
**Irish History, 1850 to the Present**
The Home Rule movement; Parnell and the land league; the Celtic revival; the rebellion of 1916 and the civil war; the Republic of Ireland and Ulster in the twentieth century.

**HI 300** **3 cr. 3 hr.**
**American Colonial History**
Exploration, settlement patterns, imperial system, social structure, rise of representative government in America, and the 18th-century wars for empires.

**HI 311** **3 cr. 3 hr.**
**The American Revolution**
The coming of the Revolution, war tactics and strategy, problems of the Confederation period and the American Constitution.

**HI 312** **3 cr. 3 hr.**
**The Age of Revolutions**
Major political, social, and cultural developments in France, England, and the United States during the age of the American, French, and Industrial Revolutions, 1763-1848. The meaning and applicability of the term "revolution" will be examined, and there will be a series of case studies of topics such as art and politics,

romanticism, and the religious revival in England. Extensive use is made

**HI 313** **3 cr. 3 hr.**
**Twentieth-Century Europe**
From the first World War to the present. Cultural, scientific, and social developments as well as domestic and international politics.
*Prerequisite: HI 112 or permission of Instructor.*

**HI 315** **3 cr. 3 hr.**
**Massachusetts History**
The Bay State from Plymouth Rock to the Kennedy clan. Political, social & economic trends.

**HI 320** **3 cr. 3 hr.**
**The American Civil War and Reconstruction 1850-1865**
Politics, slavery, and Lincoln's rise to power; political, military and diplomatic aspects of the war; failure of reconstruction.

**HI 330** **3 cr. 3 hr.**
**Progressive and New Deal America**
Topics in American politics, economics, and Society from 1900-1945, with special emphasis on reform movements, the great Depression, and World War II.

**HI 340** **3 cr. 3 hr.**
**Topics in Cold War America**
Recent American History from 1945 to the present. Topics include the Cold War, the Arms Race, Joseph McCarthy, the 1960's, the Vietnam War, Watergate, Society, the economy, and post-war presidents. Emphasis on post-war foreign policy as it has affected the United States.

**HI 350** **3 cr. 3 hr.**
**History of the Money Machine in the West, 1400-Present**
A study in some depth of the evolution of money and banking in the Modern West with particular attention to the American experience. The concern is with the social and/or private purpose of these tools of exchange.
*Prerequisite: Modern European History I and II, U.S. History I and II.*

**HI 351** **3 cr. 3 hr.**
**American Labor, 1840-1960**
A study of the patterns, personalities and social tensions involved in the responses of American Labor to the changing economic construction: from the pre-industrial society through the industrial to the post-industrial.
*Prerequisite: U.S. History I and II.*

**HI 360** **3 cr. 3 hr.**
**United States Industrial History I**
The industrialization and urbanization of the United States from colonial times to 1870.

**HI 371** **3 cr. 3 hr.**
**United States Industrial History II**
A continuation of HI 360 from

**HI 400** **3 cr. 3 hr.**
**Historiography**
An introduction to the historical method with stress on bibliographical aids, historical fallacies, and the theories of history as they have developed. Primarily for history majors.

**HI 403** **3 cr. 3 hr.**
**The U.S. In World Affairs: 1898 to the Present**
The age of imperialism, World War I, the era of "isolation," origins of World War II, American involvement and wartime diplomacy, breakdown of East-West relations, the Cold War, the Korean and Vietnam conflicts.

**HI 407** **3 cr. 3 hr.**
**Imperial Russia**
Founding of the Kievan State; the Mongol, Muscovite, and Imperial Periods to the Revolution of 1917.

**HI 408** **3 cr. 3 hr.**
**The Soviet Union**
The Bolshevik seizure of power; institutional development of the Soviet state and CPSU: Soviet American relations.

**HI 410** **3 cr. 3 hr.**
**The Frontier in American History**
The Frontier studied as a historical, social, economic, and psychological process to determine its impact on American development.

**HI 420** **3 cr. 3 hr.**
**The Republican Era, 1877-1912**
Major movements of the late nineteenth and early twentieth centuries in United States History including Grangerism, Populism, urbanization, trade unionism, socialism, and progressivism.

**HI 431** **3 cr. 3 hr.**
**The American Military Experience I**
A survey of military history from the Ancient Greeks to the 1870's. The emphasis is on the changing military strategy, tactics and weapons during their long time span, and the role of the infantry, calvary and artillery as they developed to implement the above.

**HI 432** **3 cr. 3 hr.**
**The American Military Experience II**
A survey of United States history from the Spanish-American War to the present. Integrates various elements of national security policy (military, political, diplomatic, economic, etc.) to provide an understanding of the problems of national security from a broad perspective.

**HI 450** **3 cr. 3 hr.**
**Tudor England 1485-1603**
Political, social and religious developments from Henry VII to Elizabeth I. The Reformation, the rise of Puritanism, foreign affairs, constitutional developments.

**HI 451** **3 cr. 3 hr.**
**Stuart England 1603-1689**
Political, social, religious and constitutional developments from James I to William and Mary. Opposition to the early Stuarts, the civil war, the restoration and revolutionary settlements. Events of Irish and Scottish as well as English history.

**HI 460** **3 cr. 3 hr.**
**Contemporary Latin America**
Latin America since World War II. A study of economic, cultural and political trends, agrarian reform and economic development.

**HI 480** **3 cr. 3 hr.**
**Black America**
An investigation of the historical development of the black man in the United States from his West African origins to the present. Emphasis will be placed on the role the black played in the economic, political and social life of the United States.
*Prerequisite: HI 210 or 220 or permission of Instructor.*

Open to students majoring or specializing in history with the permission of the supervising instructor and the department. Meeting times and credit by arrangement.

**HI 481, 482** **3 cr. 3 hr.**
**Far East I and II**
The emphasis of this course will be on the development of Chinese, Japanese, Korean, and South East Civilization from the earliest time until the middle 19th century period. Political, military and economic background will be covered, but special emphasis will be placed on cultural history. Far East II will be a continuation.

**HI 485** **3 cr. 3 hr.**
**Special Methods in Teaching of History**
Special techniques for the teaching of history and their relationship to the principles of general methods.
*Prerequisite: ED 301. If HI 485 in not offered when needed, ED 485 meets the same requirement.*

**HI 490**
**Independent Study in History**

**HI 493** **3 cr. 3 hr.**
**Topics in History**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under this title.

# The Honors Program

The Honors Program provides an enriched, stimulating set of courses for the best prepared and most qualified entering students as well as for top ranking Fitchburg students. Its objectives are:

To provide an integrated set of General Education courses at the freshman level which provides a rigorous and stimulating program to entering honors students. These courses are selected from courses commonly taken in many different major programs. The English composition courses are modified in accordance with the plan of integration.

To offer more advanced courses to currently enrolled students in order to provide them with a high level of proficiency in research and writing skills.

To provide students with exposure (through the 1 s.h. Honors Seminar) to a wide variety of faculty research projects and areas of faculty expertise and interest.

To provide a set of extracurricular experiences which are culturally enriching and support the course work of the program.

The Honors Program includes four segments, each corresponding to one year in a student's academic schedule:

## *The Freshman Year*

The freshman program is entitled **Modern Man: An Historical Perspective** and includes an integrated program. During the first semester, students study the 19th Century — movements, concepts, and trends. The specific studies include English, music and

history. During the spring, students study the 20th Century in English, contemporary art, and history. Other courses may be substituted for these, but in all cases, they will follow the proposed 19th and 20th Century themes.

Students in all degree Programs are required to take freshman English. Thus, the students in the Honors Program enroll in English Composition I and II. Honors students are able to utilize the program's history courses in partial fulfillment of their social science requirement, while the honors art and music courses may be used in partial fulfillment of the humanities requirement.

## *The Sophomore Year*

The title of the sophomore portion of the Honors program is **Methods of Inquiry.** One course is offered each semester and is selected from courses such as Comparative Economic Systems, Political Systems, Ethics, the Philosophy of Man, and Comparative Religions. Each offering at the sophomore level demonstrates the methods of inquiry which are utilized in the particular discipline being studied.

The second part of the sophomore program includes the **Honors Seminar** lectures which are organized around a central theme and involve many different topics representing the areas of expertise of the college faculty.

## *The Junior Year*

The program for the junior year is both interdisciplinary and thematic. The title for the program at this level is **Contemporary Dilemmas: Ethical, Scientific, Political and Philosophic.** The theme of this course and the faculty teaching it will change from year to year. One theme that has been offered was Science and Society, which focused on the scientist in literature and ethical problems posed by modern biology, and was taught by a Biologist and English faculty member. Another was Psychobiololgy — a study of the Brain, taught by a biologist and psychologist.

## *Senior Year*

The senior year of the Honors Program is devoted to the research for and writing of an **Independent Honors Thesis.** The topic of this senior Honors Project is selected from those covered in previous honors courses or from the student's major discipline. The student is assigned three credits for each semester's work. Topics for all senior projects must be approved by the student's individual committee and submitted to the Honors Committee which is composed of several members of the faculty and the Undergraduate Dean.

Freshman students are invited to join the Honors Program based on their high school grades and preparation, SAT scores, and references from secondary teachers. Sophomore and junior students are invited to join if they have a cumulative average of 3.2 or better. (See "The Honors Program" under "Courses and Programs in the College" or the Undergraduate Dean, Room 231, Condike Science Building, for more information.)

# Human Services

Coordinator:
*Richard J. Spencer*

Professors:
*Donald M. Isaac*
*David C. Maloney*
*Richard J. Spencer*

Assoc. Professor:
*John Solin*
*Cynthia Tower*

Asst. Professor:
*Mary King*

The Human Service major at Fitchburg State College is interdisciplinary, administered by the Department of Behavioral Sciences in cooperation with various other departments and areas. And interdisciplinary approach allows students to develop the broad background necessary for working with people. The student will obtain a B.S. in Human Services, preparing him/her for work in a variety of settings in the helping professions at entry level positions, and for graduate study.

## *Aims and Objectives*

The Human Services Program is competency based, with the College providing the theoretical and conceptual bases as well as facilitating the development of generic helping skills. Students will further develop and demonstrate their knowledge and skills within a community setting.

Students will get the training they need so that they will be prepared for careers in the helping professions and will be able to compete successfully in the job market. The community is served through trained personnel who will meet the demands for increased social services in our society.

Among the special characteristics of Fitchburg State's program, in addition to the interdisciplinary approach, is the coordination of supervised work experiences with academic studies. This experience involves working in organizations under professional supervision in conjunction with human service course work taken at Fitchburg State College. This gives students experience which strengthens their position when pursuing a career. Further, it gives them a more realistic basis for choosing a career, and it gives potential employers an opportunity to screen students based on job performance. Students are also encouraged, throughout their stay at Fitchburg State College, to gain additional experiences through volunteer activities.

## *Concentrations in Human Services*

The Human Services program at Fitchburg State College offers Concentrations in seven areas: Human Services Generalist; Administration; Family and Children's Services; Gerontology/Aging; Juvenile Justice, Mental Health/Rehabilitation; and Social Work. Students should meet with their Human Services advisors to learn about the recommended course work and the career possibilities related to each concentration.

## *Admission and Retention Policy*

A student may enter the Human Services Major by either declaring it as a major upon admission to the college or as internal transfer (transferring into the Human Services major from another major within this college). A student who has declared Human Services as a major upon admission (as a freshman or as an external transfer) will be subject to retention review by the Human Services Curriculum Committee following the completion of Introduction to Human Services. Retention will be based upon both academic performance and suitability for the field (as determined by the Human Services curriculum committee). Entrance into the major as an internal transfer necessitates a 2.5 cumulative grade point average, successful completion of the course: Introduction to Human Services, and a determination of suitability for a career in the Human Services field.

## *Program Structure*

There are three components to the major:

*A. The Human Service Core (these courses are required for all majors)*

HS 110
Introduction to Human Services
HS 250
Interviewing Techniques
HS 290
Social Group Work
HS 380
Methods of Case Recording and Analysis
HS 487, 488, or 489
Field Work in Human Services

There are two Field Work options: (1) a Block Placement, for 12 credits, involving 36 hours weekly for one semester (fall or spring); or (2) 18 hours weekly for two semesters (6 credits each) beginning in the fall and continuing until the end of the spring semester. Since some agencies only accept one or the other option for placements, it is essential for a student to plan well in advance in order to know if placement will begin in the fall or spring, as well as to complete all prerequisites to Field Work at least one semester prior to placement.

Admission into the Human Service Program does not guarantee entry into Field Work. Eligibility for Field Work will be based upon the successful completion of the following requirements:

1. Attendance at the registration meeting and other designated workshops (semester before Field Work).

2. A current professional liability insurance policy.

3. Successful completion of the courses: Social Group Work and Methods of Case Reporting and Analysis.

4. Approval of the "Application Package" by the Human Services Curriculum Committee, viz., application form, eligibility determination, transcript, and waiver letters (if applicable). The eligibility criteria are:

A cumulative G. P. A. of 2.50 in required Human Services/Behavioral Science courses;

demonstrated effectiveness in writing and oral communication skills;

no incomplete grades in any course, no probationary status, and no unresolved failures in the candidate's major field of study;

a semester between the course, Methods of Case Reporting and Analysis and field work; a minimum of 180 hours of agency/organization practica experience; and twelve semester hours of course credit, with three difference faculty members, in the Human Services Program (transfer students)

5. Successful preplacement interview with the Field Work/Internship Coordinator and with the supervisor at the placement site.

6. A completed Acceptance Agreement, agreed upon and signed by the Field Work/Internship Coordinator, the supervisor of the Placement site, and the student.

7. A completed Field Work contract which is agreed upon and signed by the college's Supervising Professor, the supervisor at the placement site, and the student (negotiated during the first two weeks of field placement).

*B. Human Services Behavioral Sciences Area*
Students must take PY 220, Human Growth and Development and PY 255, Abnormal Psychology plus nine more credits in Psychology, Sociology and/or Human Services. Six of the nine credits must be in Human Services.

These courses must be relevant to career goals and must be approved by a student's Human Services advisor and notation to that effect must be placed in the student's folder.

*C. Related Courses*
Students must take nine credits in courses in departments other than Behavioral Sciences. These courses must be relevant to career goals and Field Work plans. This requirement may be fulfilled by taking courses in one or more departments, e.g. Business Administration, Computer Sciences, Special Education, Political Science, Economics, English, Biology, Philosophy, Physical Education, Speech, etc. These courses must be approved by a student's Human Services advisor. Notation to that effect must be placed in the student's folder.

## *Physical Education Specializations in Human Services*

Students in Human Services may specialize the Dance, Recreation, or Dance/Recreation by selecting four three-credit professional preparation courses and four one-credit physical activity courses under the guidance of the Physical Education Department. Notation to that effect will be placed in the student's folder.

## *Voluntary Experiences*

It is to the student's advantage to gain experiences in agencies beyond those required in courses. Students may become familiar with area agencies through the Human Services Fair, held every fall semester. Wherever students work, they should obtain letters of recommendation for their placement folders. This will aid students in course work at Fitchburg State College and also when applying for employment or graduate school.

## *Policy Regarding Liability Insurance*

Liability Insurance will be required of all Human Services Majors and all other students taking a Human Services course which involves a practicum experience.

## *Policy Concerning Human Service Major and Advisor Meetings*

There is a departmental policy concerning meetings called for majors and meetings with a student's academic advisor. The policy is that failure to attend departmental meetings called for Behavioral Science majors and/or failure to contact advisors may be grounds for a student's name to be dropped from the roster of those listed in the major.

*An asterisk indicates that the course is offered infrequently

**HS 110** **3 cr. 3 hr.**
**Introduction to Human Services**
An introduction to the general field of Human Services. Course goals include an introduction to the scope and nature of Human Services work, and the agencies, organizations, and intervention models utilized. Particular focus is on the underlying philosophies, issues, and dynamics in agency/organization function. Guest lecturers from agencies, student presentations, agency reports, and a required practicum experience (45 hours per semester) represent priority activities in the course. This course is a prerequisite to all Human Services courses.

***HS 115** **3 cr. 3 hr.**
**Community Resources**
This course will acquaint students with the services of a variety of public (federal, state, and local) and private voluntary nonprofit agencies which provide services for various populations Students will learn what services are provided, how to obtain services, how to make referral to these agencies and how the agencies are operated (including staffing, funding and administrative aspects of the agencies). This course may emphasize special types of agencies/populations in different semesters.
*Prerequisite: HS 110.*

***HS 220** **3 cr. 3 hr.**
**Delivery of Human Service Systems**
This course will deal with social agencies/organizations: how they establish goals, priorities and programs; how they are governed, staffed and financed; and how each relate to the needs of the people in the area served. Content may differ according to the delivery system being addressed. A supervised practicum (20 hours per semester) is required.
*Prerequisite: HS 110.*

***HS 230** **3 cr. 3 hr.**
**Introduction to Rehabilitation Counseling**
An overview of the vocational rehabilitation process in the U.S., including its history and governing federal legislation. Emphasis on the medical, psychological, sociocultural, and vocational factors in rehabilitation of handicapped individuals. This course will focus on the role of the Rehabilitation Counselor as a professional in the rehabilitation process.
*Prerequisite: HS 110.*

**HS 240** **3 cr. 3 hr.**
**Crisis Intervention**
This course focuses on the concepts and techniques of Crisis Intervention. Many individuals are faced with such crisis situations as job loss, unwanted pregnancy, divorce, operations, death and dying. Specialized short-term techniques have been developed to help people in these situations. Students will also be required to spend approximately 4 additional hours per week in a crisis center for supervised experiences. The crisis center may ask students for a commitment beyond one semester.
*Prerequisites: HS 110, PY 335.*

**HS 250** **3 cr. 3 hr.**
**Interviewing Techniques**
Skill in interviewing is essential to the development of professional competence in the helping professions. This course is designed to help the student learn about the problems and processes of interviewing while developing basic skills needed to become an effective interviewer. The course will include assigned readings, class discussions, taped interviews, demonstrations, and practice sessions in class.
*Prerequisites: HS 110, PY 335 and permission of Instructor. Students must preregister in the semester prior to the course.*

**HS 260** **3 cr. 3 hr.**
**Juvenile Justice**
A course designed to develop student awareness of past and contemporary philosophies, practices, and paradoxes of juvenile justice. The course will examine the programmatic efforts designed for juveniles "in trouble with the law" and will focus on the relationships between the components of this system of justice. The content of the course will be supplemented by current journal research, lectures, and panel discussions by practicing professionals, and a field-based class. A supervised practicum (20 hours per semester) is encouraged.
*Prerequisite: HS 110.*

**HS 270** **3 cr. 3 hr.**
**Services to Children**
Students examine the variety of services available to children to support, supplement, and substitute for the family. Students will learn to understand the structure of the services provided, and to explore the ethical dilemmas which such services may create.
*Prerequisite: HS 110.*

**HS 280** **3 cr. 3 hr.**
**Social Work: Theory and Practice**
Social Work is one of the central professions in the Human Services. This course will deal with the history, concepts, basic issues and techniques of social work including casework, group work and community organization activities. Advanced study and career opportunities will also be explored.
*Prerequisites: HS 110, SO 110.*

**HS 290** **3 cr. 3 hr.**
**Social Group Work**
Exposes students to the theories and techniques of working with clients in groups. The course will focus on social group work as a method; its relationship to other social work methods; and to groups therapies. Students will have the opportunity to observe and/or lead groups. A supervised practicum is required.
*Prerequisites: HS 110 and permission of*

instructor. Students must preregister in the semester prior to the course.

**HS 300** **3 cr. 3 hr.**
**Human Services Administration**
The study of Human Services Administration is an exploration of administrative functions and their relationship to organizational effectiveness and efficiency. The internal and external politics of agency survival are addressed, and the theoretical concepts of management and leadership styles are explored. Course content is supplemented by lectures and panel discussions by practicing professionals, field-based classes, and current journal research.

A supervised practicum (20 hours per semester) is encouraged.
*Prerequisite: HS 110.*

**HS 310** **3 cr. 3 hr.**
**Social Casework**
This course will explore casework concepts and techniques as utilized in a variety of settings, e.g. family agencies, mental health settings, hospitals, courts. The focus will be on the casework process with individuals, couples and families.
*Prerequisites: HS 110, HS 350*

**HS 320** **3 cr. 3 hr.**
**Working with the Aging**
Examines past as well as contemporary philosophies, practices, and processes of working with the aging. Further, the course examines the various roles and practices utilized by social support networks in maintaining the social, psychological, and physical well-being of the aged. A supervised practicum is required.

**HS 330** **3 cr. 3 hr.**
**Probation**
This course focuses on the correctional philosophy of probation by developing an understanding of its historical and legal evolution, its essence, and its administration in varied court systems. The responsibilities of probation professionals are explored in conjunction with criminal justice issues and practices which affect the court's decision to use this alterative to incarceration. Course content is supplemented by current journal research, lectures by practicing professionals, and a field-based class. A supervised practicum (20 hours per semester) is encouraged.
*Prerequisite: HS 110.*

***HS 340** **3 cr. 3 hr.**
**Community Organization**
This course will focus on methods used in organizing citizen action groups to bring about change. Principles, methods and techniques of organizing, goal formulation, group maintenance, community planning and strategies will be studied.
*Prerequisites: HS 110*

**HS 350** **3 cr. 3 hr.**
**The Abuse and Neglect of Children**
This course will present an overview of concepts vital to understanding and working with the abusive and neglectful parent: including differentiation between abuse and neglect, reporting responsibilities, legal aspects, prognosis, prediction and the role of the community. Case studies will be used to enhance student understanding.
*Prerequisites: HS 110, and PY 220.*

**HS 358** **3 cr. 3 hr.**
**Social Welfare Policy**
This course enables students to learn the importance of social welfare policy, the relationship of values to policy formulation, and how to analyze policy. Students apply this knowledge to income maintenance, poverty, health and mental-care, housing and neighborhood living space, and to the general problems of service delivery.
*Prerequisite: HS 110*

**HS 360** **3 cr. 3 hr.**
**Topics in Human Services**
Course having a more narrow focus or those taught on an irregular basis may be offered. New courses may also be taught on an experimental basis under this title.

**HS 380** **4 cr. 8 hr.**
**Methods of Case Reporting and Analysis**
Exposes students to the technical and practical skills involved in the process of preparing, recording, presenting, and analyzing individual case reports. Case report applications as they relate to schools, clinics, the courts andother human service agencies will be addressed during the course. A spervised practicum in an approved agency setting (90 hrs. per semester) is required.
*Prerequisites: PY 335, HS 250 and permission of instructor. Students must preregister in the semester prior to the course.*

**HS 487-488, 489** **6 cr. 18 hr.**
**12 cr. 36 hr.**
**Field Work in Human Services**
Field Work is the structured academic experience which allows Senior Human

Services majors who have successfully met eligibility criteria to integrate and apply the skills and theory of the Human Services discipline in a field-based setting. Such an experience helps the student develop an understanding of the effects of administrative practices and governing policies on the ability to carry out the responsibilities of his/her field placement.

Students participate under the supervision of qualified professionals in Human Service Organizations, e.g., mental health agencies, social services, hospitals, prisons, family service agencies, probation departments, residential programs, nursing homes, community advocacy organizations, programs for the aging, crisis centers, etc. Also, some placements are conducted in industrial settings, e.g., community relations, employee assistance programs, personnel departments, corporate donations and human resource development programs.

Placements may be in direct-service or in administrative settings. In addition to the field experience, students participate in a weekly seminar held by the college' supervising professor. Here, students share their experiences and develop heightened awareness of their roles in the organizations in which they are functioning.

HS 487-488: students will work in an agency 18 hours per week throughout the school year, beginning in September. 6 credits each semester. HS 489: a block placement of 36 hours per week for one semester, either Fall or Spring. 12 credits, one semester.

Students must have completed their prerequisites at least 1 semester before taking Field Work and must pre-register with the Field Work/Internship office in the beginning of the semester prior to the semester before they plan to enter an agency, i.e, students planning a Fall placement must have completed their prerequisites by the end of the previous Fall semester and pre-register with the instructor early in the previous Spring. Students must have had previous volunteer experience prior to enrolling in Field Work.
*Prerequisites: HS 352, HS 366, and successful completion of the Field Work eligibility requirements.*

**HS 490**
**Independent Study**
Independent Study is offered to outstanding students of Junior or Senior standing and requires approval of the professor, of the Human Services Curriculum Committee, and of the Chairman of the Behavioral Sciences department. Independent Study may take the form of special advanced reading programs or problem identification and research. Under no circumstances will independent study be substituted for regularly scheduled courses.

**HS 493** **3 cr. 3 hr**
**Topics in Human Services**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may also be taught on an experimental basis under this title.

# Industrial Technology

Chairman:
*Philip Tardanico*

Professors:
*George James*
*Lawrence Ovian*

Assoc. Professors:
*Howard Besnia*
*Stanley Bucholc*
*Erling Hanson*
*Lloyd Harte*
*Robert Kokernak*
*Edward Martens*
*Philip Tardanico*
*Jack Wescott*

Asst. Professors:
*James Andrews*
*Edson Phelps*
*Luther Tabor*
*Steven Therrien*

The Industrial Technology department is unique at Fitchburg State College in that it offers two major degree programs in five concentrations: the degree of Bachelor of Science in Education, with a major in Industrial Arts/ Technology Education (124 semester hours); and the degree of Bachelor of Science in Industrial Technology (120 semester hours), with concentrations in Construction Technology, Electronics Engineering Technology, Graphic Arts Technology, or Manufacturing Technology.

## *Industrial Arts / Technology Education Major*

The Industrial Arts/Technology Education program prepares students for a teaching career. Successful completion of this program enables the graduate to meet the certification requirements of the Commonwealth of Massachusetts. Upon certification, the graduate is eligible to teach in the public schools (grades 5-12) in the following technical areas:

Drafting
Electricity/Electronics
Graphic Arts
Construction*
Manufacturing*
Power Mechanics

*to include the areas of wood and metal fabrication systems.

The program requires a first and second level course in each of the technical areas previously mentioned. Added to these required courses are two technical electives selected by the student in conjunction with a departmental advisor. Further coursework is also required to develop teaching skills, followed by a one semester student teaching practicum. To enroll in student teaching, the candidate must have a 2.5 cumulative average for all Technology Education courses and have successfully completed a first-aid course, General Psychology (PY 110), Adolescent Psychology (PY 223), and received a positive recommendation from the faculty of the Industrial Techology Department.

## *Industrial Technology Major*

In our complex industrial society, there exists an ever increasing need for trained personnel to meet the challenges of new and emerging technologies. The concentrations offered in the Industrial Technology program were developed with the intention of providing a pool of highly skilled technologists which will sustain the needs of industry within the Commonwealth as we approach the 21st century. The concentrations include Construction Technology, Electronics Engineering Technology, Graphic Arts Technology, and Manufacturing Technology.

18 semester hours of required core courses must be taken. Selections are made from the following:

Evolution of Industrial Technology
Technical Analysis II
Technical Drawing
Electronics I
Metal Fabrication
Graphic Arts Processes
Automotive Technology
Wood Fabrication

Each concentration requires a unique combination of these course offerings.

The *Construction Technolgy* concentration provides students with information essential for managerial personnel in the construction industry. Students are exposed to a planned sequence of courses preparing them for on-site construction related activities. These include the coordination of workers, materials, subcontractors, and local, state, and federal regulatory agencies.

The following courses (21 semester hours) are among those required to assist the student in developing the skills necessary to function as a member of a construction management team:

Architectural Drawing
Structures
Environmental Energy Systems
Estimating & Bidding
Construction Supervision
Seminar in Construction
Strength of Materials

An additional 21 semester hours of free and technical electives are required to complete the program.

The *Electronics Engineering Technology* concentration prepares students for positions in the challenging field of electronics By developing the theoretical and practical skills required for this discipline. Electronics and electronic systems play a key role in modern industrial societies serving as a source of power, as a means of affecting control, as a means of communication, and as a means of processing information.

The skills students need are acquired through a planned sequence of courses (21 semester hours) involving classroom work in conjunction with hands-on experience with the most modern testing and measuring equipment. Some of the required courses are:

Electronics I
Electronics II
Automated Manufacturing & Robotics
Engineering Experimentation
Statics

An additional 21 semester hours of free and technical electives are required to complete the course.

In addition to these courses, students select Electronics electives with the help of a departmental advisor to further enhance their technical competence. Courses from the Math/Science curriculum are also required to broaden the technical background.

The *Graphic Arts Technology* concentration provides students with technical experience

in printing. Publishing is a growth industry. The needs for qualified Graphic Arts technical people has greatly increased as the overall makeup of the final product has changed. Today's printed products required higher quality, more color, and people with the appropriate technical expertise to coordinate these effects in a modern printing plant. As our society advances, the needs to transmit printed information increases at an ever higher rate.

The following technical courses (21 semester hours) are among those required to develop within the student the skills necessary to function in the Graphics Industry:

Offset Lithography
Production Printing
Screen Printing
Computers in Industrial Technology
Printing Estimating & Production Control
Seminar in Graphic Arts
Layout & Copy Preparation

An additional 21 semester hours of free and technical electives are required to complete the program.

Manufacturing Technology is designed to develop both technical and analytical competencies required of entry-level positions within manufacturing engineering support. Many employees have stated the need for resourceful, technically competent people to interface between engineering and other personnel within the manufacturing environment.

The competencies are acquired through a sequence of courses involving laboratory experiments and additional coursework within the Math/Science curriculum. This combination provides the student with the practical knowledge of manufacturing processes, the ability to apply these processes, and the ability to plan, coordinate, and implement aspects of production projects.

Among the required courses (21 semester hours) designed to develop these skills are the following:

Strength of Materials
Statics
Automated Drafting Systems
Automated Manufacturing & Robotics
Engineering & Experimentation
Design & Planning
Production Planning & Control

An additional 21 semester hours of free and technical electives are required to complete the program.

## *Internships*

Senior status students in all concentrations are eligible to participate in the Internship program, allowing a student with an appropriate grade average to receive up to 12 academic credits for a one semester work experience.

## *The Minor in Industrial Science*

The minor in industrial science offers a concentration in manufacturing, construction, electronics/engineering, graphics arts or industrial training.

*Manufacturing Technology*
IT 272 Robotics I
IT 373 Automated Manufacturing & Robotics II
IT 241 Automated Drafting Systems
IT 131 Materials
Two approved electives

*Construction Technology*
IT 240 Architectural Drawing
IT 231 Structures
IT 330 Estimating and Bidding
IT 332 Construction Supervision
Two approved electives

*Electronics Engineering Technology*
IT 110 Electronics I*
IT 210 Electronics II*
IT 310 Electronics III*
Three approved electives

*Students with equivalent course may substitute technical elective.

*Graphics Arts Technology*
IT 150 Graphics Arts Processes or
CM 391 Graphics Arts Production
IT 250 Offset Lithography
IT 352 Printing Estimating and Production Coordination
IT 252 Layout and Copy Preparation or
CM 381 Graphics I
Two approved electives

*Industrial Training*
IT 380 Methods of Teaching Industrial Arts
IT 381 Curriculum Development in Industrial Arts
CM 235 Communications Technology
Three approved electives

*Prerequisites: Application and departmental*

approval; prerequisites may be waived based upon an individual's experience and background.

Interdisciplinary Graphics Minor, see Graphics.

*Asterisk indicates that the course is offered infrequently.

**IT 110** **3 cr. 4 hr.**
**Electronics I**
This beginning course will provide an overview of electronics technology by introducing students to selected topics in linear circuits, analog electronic circuits, and digital electronic circuits.

**IT 120** **3 cr. 4 hr.**
**Metal Fabrication Systems, Procedures and Techniques**
Study of mass-production theory, systems, and procedures in metal working.

**IT 130** **3 cr. 4 hr**
**Wood Fabrication Systems, Procedures and Techniques**
Furniture is designed, constructed and finished. Advanced fabrication concepts and techniques are studied.

**IT 131** **3 cr. 4 hr.**
**Materials**
An overview of selected materials and their properties including laboratory experiences designed to give students an understanding of research with materials.

**IT 140** **3 cr. 4 hr.**
**Technical Drawing**
This course will include lettering, dimensioning, orthographic projection, symbols, sectioning, isometric, and auxiliary views. Problem development and blueprint reading will be stressed.

**IT 150** **3 cr. 4 hr.**
**Graphic Arts Processes**
Production and evaluation of messages utilizing graphic arts processes. This includes phototypesetting, camera work, stripping, plate making and offset press operations.

**IT 160** **3 cr. 4 hr**
**Automotive Technology**
An introduction to multi cylinder gasoline engines; systems include ignition, fuel, brake, drive line and valve train.

**IT 170** **3 cr. 3 hr.**
**Evolution of Industrial Technology**
Study of the history of industrial technology, and the qualifications, duties, and responsibilites of related careers. A field based prepracticum experience is an integral part of this course. This experience may be in a school or industrial setting.

**IT 171** **3 cr. 3 hr.**
**Technical Analysis**
Development of computational skills used in solving problems involving polynomials, equations, trigonometry and vectors in the technical areas of mechanics, electronics, and fluid dynamics.
*Prerequisite: M 130*

**IT 210** **3 cr. 4 hr.**
**Electronics II**
This course will begin to develop the concepts and techniques appropriate to design and analysis of linear and analog electronic circuits. Electronic circuits employing discrete devices will be introduced.
*Prerequisite: IT 110*

**IT 220** **3 cr. 4 hr.**
**Advanced Metal Fabrication Systems**
Specialized processes in the metal working industry will be studied. Laboratory experiences will include performing operatings with tool cutter grinders, indexing heads, numberial control millers, turret lathes, and tracer lathes.
*Prerequisite: IT 120*

**IT 230** **3 cr. 4 hr.**
**Production Furniture Fabrication**
Emphasis on the mass production of a product employing the development and use of jigs, fixtures and other suitable mass production procedures. Appropriate methods of production managment are employed.
*Prequisites: IT 130,IT 140*

**IT 231** **3 cr. 4 hr.**
**Structures**
A study of the construction industry with emphasis on construction methods, practices and procedures. A study of materials, equipment, and techniques used to construct a structure as well as research in architectural problems related to construction.
*Prerequisites: IT 130, IT 140*

**IT 240** **3 cr. 4 hr.**
**Arthitectural Drawing**
Students design a practical residential structure, conforming to standard practices and Building codes. Technical skills are developed enabling students to communicate ideas. Topics include materials of construction, history and development of various styles, orientation of house on lot,

loads, and design of structural members. Field trips and available films are used.
*Prerequisite: IT 140*

**IT 241** **3 cr. 4 hr.**
**Automated Drafting Systems**
This course is designed to teach the general concepts related to automated drafting with a special emphasis on technical drawing. Specialized applications of industrial practices for drafting will be experienced in this course. One semester of technical or mechanical drafting is a prerequisite. A computer background is not necessary.
*Prerequisites: IT 140, or permission of the instructor.*

**IT 250** **3 cr. 4 hr.**
**Offset Lithography**
The students study the lithographic form of printing as it is used in modern industry. The majority of the course is spent in the darkroom and setting up and running offset presses. Concepts include line copy, halftone, special effects, diffusion transfer and density. Roles students will pursue are designer, photographer, flat-stripper, platemaker, press operator and binder.
*Prerequisite: IT 150*

***IT 251** **3 cr. 4 hr.**
**Production Printing**
Emphasis on scheduling and production of contracted jobs. The course is designed to allow serious students to apply their previous instruction in a controlled, industrial type setting. Enrollment is limited to ten students.
*Prerequisites: IT 250 and permission of the Instructor.*

**IT 252** **3 cr. 3 hr.**
**Graphic Design**
Design and production of messages will be studied. Students will prepare artwork and mechanicals using equipment found in the Industrial Technology Department. The technology of communications will also be included.
*Prerequisite: IT 150 (Credit will NOT be given for both CM 381 and IT 252)*

**IT 260** **3 cr. 4 hr.**
**Alternate Energy Sources**
The study of solar and other forms of energy to supply household needs. Students build and test both commercial and laboratory made devices.
*Prerequisites: IT 160 or permission of the Instructor.*

**IT 270** **3 cr. 3 hr.**
**Man Technology Society**
Study of universal characteristics of technology, including effects of technology on society and culture. Topics of interest are researched.

**IT 271** **3 cr. 3 hr.**
**Statics**
Study of laws of static equilibrium of real bodies. Includes beam and structural analysis, friction, centroids, and moments of inertia.
*Prerequisite: IT 171*

**IT 272** **3 cr. 4 hr.**
**Computers in Industrial Technology**
This course will familiarize students with computers through presentation of selected hardware and software concepts. Opportunites for extensive programming practice will be provided.

**IT 273** **3 cr. 4 hr.**
**Automated Manufacturing & Robotics I**
This course will provide an opportunity to learn the fundamentals of industrial robotics. Basic theory and practice will be stressed. Topics that will be studied and experienced will include robotics terminology, robot classification, industrial robot programming, and robot classifications.

**IT 274** **3 cr. 4 hr**
**Safety and First Aid**
Introduction to the latest occupational safety and health standards and to provide opportunity for the student to perform practical inspections, complete reports, and recommend corrective measures to insure safety and healthful comditions. Basic First Aid instruction is included.

***IT 275** **3 cr. 4 hr.**
**Plastics Technology**
An investigation of the rapidly expanding area of plastics, how they are produced, their merits and limitations. Tests are conducted to confirm reference data and to promote a better understanding of various plastics and products made from them.
*Prerequisite: Some background in Chemistry essential.*

**IT 276** **3 cr. 4 hr.**
**Ceramics**
Course includes throwing on the wheel and glazing techniques, with strong emphasis on different sculptural forms. (Credit will not be given for both AR 214 and IT 214.)

**IT 277** **3 cr. 4 hr.**
**Introduction to Experimentation I**
Emphasis is on the accumulation and evaluation of experimental data. Topics include literature surveys, project organization and managements, types and

uses of instrumentation, instrument accuracy, statistical analysis of data, design of experiments, and reportwriting techniques.
*Prerequisites: IT 171 and four of the appropriate freshman level courses.*

**IT 278** **3 cr. 4 hr.**
**Materials Technology**
Topics include atomic bonding, atomic arrangements, structural imperfections, electronic structures and processes, phases and reaction rates and stability of materials in service environments.
*Prerequisites: IT 171, PH 270, CH 100 taken concurrently or permission of the Instructor.*

**IT 279** **3 cr. 4 hr.**
**Crayonstone Lithography**
Students grind and prepare their stones, develop and transfer their illustrations to the stones, draw and shade on the stones and print their illustrations. (Credit will not be given for both AR 425 and IT 279.)

**IT 290** **3 cr. 4 hr.**
**Designing and Planning**
Elements of product design are experienced through problem solving. Drafting, human engineering and product analysis and incorporated in design and construction of prototypes.
*Prerequisite: IT 171 and four of the appropriate freshman level courses.*

**IT 310** **3 cr. 4 hr.**
**Electronics III**
This course will further develop the concepts and techniques appropriate to the design and anlysis of linear and analog electronic circuits. It will provide sufficient background for students who wish to elect upper level electronics courses.
*Prerequisite: IT 110, IT 210*

**IT 311** **3 cr. 4 hr.**
**Digital Electronics**
An introduction to the techniques for analyzing and synthesizing digital circuits. Emphasis in design work is on IC technology.

**IT 312** **3 cr. 4 hr.**
**Control Theory**
Introduction to control theory utilizing examples of mechanical, fluidic, electronic and hybrid control systems. Emphasis is on design utilizing the project approach.
*Prerequisites: IT 256, IT 310.*

**IT 320** **3 cr. 4 hr.**
**Numerical Control**
Introduction and laboratory experiences are designed to provide students with the basic knowledge and techniques of programming and operations of the tape-controlled milling machine.
*Prerequisite: IT 120*

**IT 321** **3 cr. 4 hr.**
**Machine Processes**
The design and fabrication of metal products utilizing machine tools, metalworking processes and welding.
*Prerequisites: IT 220*

**IT 322** **3 cr. 4 hr.**
**Product Modeling and Rendering**
A laboratory course focusing on the preparation of product renderings and the development of three dimensional models for presentation and analysis of design products, processes or systems. The course will cover the types and uses of renderings and models; techniques and standards in their development; and appropriate material representation.
*Prerequisites: IT 130, 270, 120, 150, 290.*

**IT 330** **3 cr. 4 hr.**
**Estimating and Bidding**
The principles of preparing comprehensive unit pricing and sytems approach for construction will be taught in this course. The emphasis will be on detailed estimates in order to determine the scope and cost of each proposed design element.
*Prerequisites: IT 231, 240, 331*

**IT 331** **3 cr. 4 hr.**
**Environmental Energy Systems**
A survey course concerning itself with the principles of heating, ventilating, air-conditioning, purification and control systems, as well as electrical and electronic control and delivery systems, water feed and delivery system, waste water disposal systems.
*Prerequisites: IT 160, 140, 110.*

**IT 332** **3 cr. 4 hr.**
**Construction Supervision**
This course will enhance the students understanding and skills for the function of supervision of a construction project. The emphasis will be on coordinating all of the construction resources including materials and manpower needed for the successful completion of on-site structure.
*Prerequisites: IT 231, 240, 330, 331.*

**IT 333** **3 cr. 4 hr.**
**Wood Technology**
Students will be introduced to a series of industrial techniques through which lumber is used to produce products. Veneering, patternmaking, model building, finishing,

laminating and bending are some of the techniques to be explored.

**IT 340** **3 cr. 4 hr.**
**Engineering Drawing**
This course includes orthographic projection, intersections, developments, revolutions, axonometrics, assembly details, and pictorial drawings.
*Prerequisite: IT 140.*

**IT 350** **3 cr. 4 hr.**
**Screen Printing**
Students work with both hand-cut stencils and photo-direct emulsions. Emphasis is on multiple color registration and halftoning, using both hand and machine printing techniques.
*Prerequisite: IT 150 or permission of Instructor.*

**IT 352** **3 cr. 3 hr.**
**Printing Estimating and Production Coordination**
This course provides students with an opportunity to properly determine how to estimate printed products. Relationships between the estimating department, sales, customer service, order writing and production departments will be covered.
*Prerequisite: IT 250*

***IT 353** **3 cr. 4 hr.**
**Typography I: Dynamics and Disciplines**
Origins of the alphabet, evolution of type; traditional typography; nomenclature; classification of typefaces: planning, layout, the budget considerations; dimensional coordination, proportion and the grid system, copyfitting, markup, and proofreading; composition and computer technology. Organized for a reciprocity of subject matter in a technological environment.
*Prerequisites: IT 150, 250.*

***IT 354** **3 cr. 4 hr.**
**Calligraphy**
A brief historic introduction to the arts of the Merovingian and Carolingian Miniscules that preceded the modern hand lettering of today. The art of the broad nib pen and wide brush will be emphasized. Students develop a series of plaques, signs and charts.

**IT 360** **3 cr. 4 hr.**
**Advanced Alternate Energy Sources**
Course is limited to students who have demonstrated the ability and desire to continue the research and development of a solar energy system that showed promise in IT 260.
*Prerequisites: IT 260 or permission of Instructor.*

**IT 370** **3 cr. 4 hr.**
**Pneumatic and Hydraulic Energy Systems (Fluid Dynamics)**
Flow phenomena of compressible and noncompressible fluids are studied, including fluid statics and dynamics, boundary layers, conduit fluid flow, dynamic drag and lift.
*Prerequisite: Technical Mathematics course.*

**IT 371** **3 cr. 4 hr.**
**Product Analysis and Quality Assurance**
A course designed to test and evaluate the ability of a product to provide its intended service or function. Destructive and nondestructive tests are employed.
*Prerequisite: The appropriate freshman sequence.*

**IT 373** **3 cr. 4 hr.**
**Automated Manufacturing and Robotics II**
To develop competencies in the set-up, control and use of CNC equipment; and to develop integration (CIM) applications between robots (for material handling and assembly) and CNC automated manufacturing equipment.
*Prerequisites: IT 140, 120, 130.*

**IT 380** **3 cr. 3 hr.**
**Methods of Teaching Industrial Arts**
This course is designed to provide the prospective industrial arts teacher with a series of related academic, observational adn participating experiences based on the fundamental elements of the teaching-learning process. Students will develop, implement and evaluate a variety of thort-range instructional methods.

**IT 381** **3 cr. 4 hr.**
**Curriculum Development in Industrial Arts**
During this course the student will be presented experiences which relate directly to the development of a course of study. Students will also have the opportunity to analyze and develop strategies pertaining to curriculum development. Students also experience a pre-practicum in a public school industrial arts program.

**IT 382** **3 cr. 3 hr.**
**Evaluation and Lab Management**
During this course the student will be presented learning experiences relating to management tasks and ancillary activities. Students will also receive information regarding student evaluation.

**IT 390** **3 cr. 3 hr.**
**Production Planning and Control**
Theory and practive in the essentials necessary for the operation of a manufacturing or service facility and the

main thrust of this course. Layout of production, line operations, time study requirements and related work problems resulting in an economical and efficient operation
are included.

***IT 391** **3 cr. 4 hr.**
**Engineering Experimentation II**
Activities required of technicians in the industrial setting are simulated. Students construct and assemble laboratory apparatus and perform tests on that apparatus.
*Prerequisites: IT 171, 277 and four of the appropriate freshman level courses.*

**IT 393** **3 cr. 4 hr.**
**Strength of Materials**
An introduction to the behavior of real materials under the influence of forces and couples. Axial, shear, torsional and flexural stresses and strains are determined.
*Prerequisites: IT 171, IT 271.*

***IT 410** **3 cr. 4 hr.**
**Industrial Electronics**
Study of application of electronic principles to devices and equipment involving thermo electronics, photoelectronics, solid-state motor control, welding, etc.
*Prerequisite: permission of Instructor.*

**IT 411** **3 cr. 4 hr.**
**Electronic Communications Systems**
The system and circuits utilized in electronic communications will be studied including both transmitters and receivers. Methods of modulation will be discussed. Television will be utilized as a representative system.
*Prerequisite: permission of instructor.*

***IT 420** **3 cr. 4 hr.**
**Heat Treatment of Metals**
This course covers the study of ferrous and non-ferrous metals commonly subjected to heat treatment to modify their physical properties. Hardening, tempering, annealing, and surface treatments are studied.

***IT 421** **3 cr. 4 hr.**
**Welding and Casting**
Instruction and laboratory experiences are designed to provide students with the basic knowledge and techniques of welding, cutting, and braizing using oxyactylene welding equipment. Instruction and laboratory experiences are designed to provide students with the basic knowledge and techniques of AC and DC welding and inert gas welding. Students acquire basic knowledge and application of casting techniques used in the non-ferrous casting industry. Field trips to casting industries are included in the course.

***IT 422** **3 cr. 3 hr.**
**Design of Machine Elements**
Introduction to design principles and failure modes for various mechanical components. Includes static and fluctuating Loads for brittle and ductile materials, fatigue stress concentrations.
*Prerequisites: IT 340, 393.*

***IT 423** **3 cr. 4 hr.**
**Physical Metallurgy**
A study of metals, their properties and how they can be modified. Equilibrium and phase diagrams are introduced as needed. A variety of laboratory experiences are provided.
*Prerequisite: permission of Instructor.*

***IT 430** **3 cr. 4 hr.**
**Jig and Fixture Design and Construction**
Introduction in the principles of jig and fixture design are covered. The students construct simple jigs and fixtures for various applications.
*Prerequisites: Four of the appropriate freshman level courses. (See IT 313, IT 314, IT 333, and IT 315 in the materials area for possible electives related to transformation.)*

**IT 431** **3 cr. 4 hr.**
**Seminar in Construction**
This course is open to student specializing in construction. The course will deal with current trends and issues facing the construction industry at local, state, and federal levels. Emphasis on utilizing available resources to solve current problems.
*Prerequisites: IT 231, 330, 332, 240.*

***IT 440** **3 cr. 3 hr.**
**Descriptive Geometry**
Descriptive geometry is concerned with graphical representation and the solution of problems using spacial relationship of points, lines, and planes bymeans of projections.
*Prerequisite: IT 340.*

***IT 441** **3 cr. 4 hr.**
**Drawing Graphics**
A course designed to provide students with depth in drafting field and provide areas not normally covered in a Drafting Program. The student should have a good understanding of the drafting field prior to taking this course. The areas to be covered are (a) Boat Lofting (b) Topographic Drawing (c) Graphs and Charts.
*Prerequisite: IT 140.*

***IT 442** **3 cr. 4 hr.**
**Advanced Design**
Experimental design projects using the two and three dimensional approaches. The design of communication forms will make use of the five senses.
*Prerequisites: IT 250.*

***IT 450** **3 cr. 4 hr.**
**Process Color Separation**
Students experience the direct screening process obtaining four separation negatives with masks. The negatives are printed by means of a color key.
*Prerequisite: IT 250.*

***IT 451** **3 cr. 4 hr.**
**Illustration**
An intensive, advanced course in allusive and expressive typography oriented towards students who aspire to a career in graphic and typographic design, type design, or art direction. Organized for reciprocity of subject matter in all illustrative context, the instruments and methods of the new technologies are studied, and the interdependence of design and reprodution are addressed through practical application.
*Prerequisites: IT 150, 250.*

**IT 452** **3 cr. 3 hr.**
**Seminar in Graphic Arts**
Students will study and discuss current trends, issues, problems and technical material. Emphasis will be placed on comprehending why the trends must take place and how the emerging technology will allow this to happen. Students will be able to project future technical trends within the graphic arts area.
*Prerequisite: IT 250*

***IT 460** **3 cr. 4 hr.**
**Internal-Combustion and Diesel Engines**
The students test, modify, and retest an engine. Diesel theory, injectors, and pumps are included.
*Prerequisites: IT 160 or permission of instructor.*

**IT 470** **3 cr. 4 hr**
**Research Industrial Materials**
The students are required to select a material and conduct an In-depth study. Class reports are required. Individual initiative and efficient use of time are stressed.
*Prerequisite: permission of Instructor.*

***IT 471** **3 cr. 4 hr.**
**Thermal Technology**
The laws of thermal energy and heat transfer are studied, including specific heats, thermal conductivities, gas and steam cycles, conduction, convection and radiation.
*Prerequisite: IT 171.*

**IT 472** **3 cr. 3 hr.**
**Manufacturing/Quality Control**
Theory as well as practical work is emphasized in this course. Lab work includes the use of a variety of inspection and measuring tools pertinent to quality control in a manufacturing operation. Procedures used to determine product assurance, reliability and testing are studied.

**IT 473** **3 cr. 4 hr.**
**Problems of Mechanical Maintenance**
A course designed to investigate problems encountered in the maintenance of mechanical equipment. Topics covered are lubrication, bearing installation, replacement of parts, safety, and color dynamics.

***IT 480** **3 cr. 4 hr.**
**Industrial Arts for Special Education**
Fundamentals of planning and constructing teaching aids of projects are stressed. Knowledge of tools, machines, and processes is covered.

**IT 484** **3 cr. 3 hr.**
**Pre-practicum and Seminar**
Opportunity to formulate concepts of industrial arts education and develop a working knowledge of principles and practices of industrial arts administration. Pre-practicum experiences are also included. State requirement for certification.

**IT 486** **10 cr. 30 hr.**
**Practicum in Industrial Arts**
Experience in planning and implementing instructional strategies in a public-school setting. Requirements include selfevaluation. State requirement for certification.

**IT 496** **12 cr. 36 hr.**
**Internship in Industrial Science**
Students participate in an industrial experience with the approval of the Industrial Technology faculty.

**IT 490** **3 cr.**
**Independent Study**
Students may enroll in a Directed Study.

**IT 493** **3 cr. 3 hr.**
**Topics in Industrial Arts**
Courses having a more narrow focus or those taught in an irregular basis may be offered. New courses may be taught on an experimental basis under this title.

# Mathematics

Chairman:
*Barry Light*

Professor:
*Barry Light*

Assoc. Professors:
*Richard Bisk*
*Christine Cosgrove*
*Lucy Dechene*
*Ernest Fandreyer*
*Gerald Higdon*

Asst. Professors:
*Robert Bentley*
*Robert Clark*
*Nicholas Copoulos*
*Donald Freeburg*
*Claire McAndrew*
*Abdulkeni Zekeria*

## *Introduction*

The Department of Mathematics serves all students at Fitchburg State College.

In all of its courses, the Mathematics Department seeks to support the College's "high standards of intellectual performance."

Mathematics Majors receive a comprehensive foundation in abstract and applied mathematics as preparation for graduate school or a professional career. Minors in Mathematics receive the mathematical foundation needed for advanced work in their major field.

The Mathematics Department serves other students through courses for their major or through courses for their Liberal Arts and Science Program.

*Asterisk indicates that the course is offered infrequently.

## *B.A. and B.S. in Mathematics*

The Bachelor of Science and the Bachelor of Arts in Mathematics must include Calculus I, II, III, and IV, Linear Algebra, Abstract Algebra and at least fifteen additional semester hours of advanced mathematics (300 or 400 level), at least nine of which must be at the 400 level. One course in Computer Science is required at the level of CS 150 or higher. Graduate courses may be substituted for 400 level courses. The Bachelor of Arts degree requires foreign language proficiency at the second year level.

## *B.S. in Secondary Education*

The Bachelor of Science in Education, Secondary, Mathematics must include Functions, Calculus I, II, III, and IV, Linear Algebra, Geometry, Probability and Statistics I, Abstract Algebra and at least six additional semester hours of advanced mathematics courses at 300 or 400 level. Graduate courses may be substituted for 400 level mathematics courses. One course in Computer Science is required at the level of CS 150 or higher.

Successful Practices in Secondary Education, Teaching Writing to Secondary Students, General Psychology, Adolescent Psychology, Tests and Measurements, Methods and Materials in Secondary Mathematics and Student Teaching in Mathematics are also required for the Bachelor of Science in Education.

## *Minor in Mathematics*

A minor in mathematics contains 21 semester hours of which 12 semester hours are taken in Calculus I, II, and III and either Abstract or Linear Algebra. The additional three elective courses may be chosen from Introduction to Mathematical Thought or any mathematics course at the 300 or 400 level. At least one of the three electives must be at the 400 level.

**MA 010** **3 inst. cr. 4 hr.**
**Basic Mathematics I**
A review of basic arithmetic skills and an introduction to elementary algebra.

**MA 020** **3 inst. cr. 4 hr.**
**Basic Mathematics II**
A continuation of Basic Mathematics I. Concepts studied are from Elementary Algebra through quadratic equations.

Note 1: Institutional Credits (inst. cr.) do not count toward graduation.

Note 2: All students must pass the Math Placement Exam or MA 020 *before* they will be permitted to take any of the following Mathematics courses.

**MA 100** **3 cr. 3 hr.**
**The Nature of Mathematics**
An elementary course intended to acquaint the student with the nature of mathematical activity such as inductive and deductive reasoning, and problem solving. This course is not a review of high school mathematics.

**MA 110** **3 cr. 3 hr.**
**The Nature of Statistics**
Elementary concepts of probability and statistics with applications are studied to provide an awareness of the scope and uses of statistics in the world. (Credit will not be awarded for both MA 110 and MA 170.)

**MA 115** **3 cr. 3 hr.**
**Technical Mathematics**
A study of elementary topics used in solving technical and industrial problems. This

course is intended for students in the Industrial Technology Department.

**MA 120** **3 cr. 3 hr.**
**Finite Mathematics**
A variety of discrete mathematical models are developed and applied to business and to the social and life sciences. Topics include matrices, linear programming, probability and game theory.

**MA 130** **3 cr. 3 hr.**
**Functions**
This course prepares students for the study of calculus. Topics include the real numbers, equations and inequalities, analytic geometry, and polynominal, trigonometric, exponential, and logarithmic functions.

**MA 150** **3 cr. 3 hr.**
**Introduction to Mathematical Thought**
Intended to introduce mathematics as the science of reasoning. Topics include elementary set theory, logic, techniques of proof, basic properties of the real number system, mathematical induction, and axiomatic systems.
*Prerequisite: MA 130 or its equivalent.*

**MA 170** **3 cr. 3 hr.**
**Applied Statistics I**
Methods of data collection, organization and interpretation, sampling, probability, estimation, and testing are applied to areas including biology, business, medicine, economics, and education. (Credit will not be awarded for both MA 110 and MA 170.)

***MA 200** **3 cr. 3 hr.**
**Informal Geometry**
An intuitive study of basic geometric objects and concepts. Topics studied vary but are chosen for their intuitive appeal as well as their geometric significance.

**MA 220** **3 cr. 3 hr.**
**Calculus for Business**
A survey of methods and applications of the calculus for functions of one variable that are useful in business and economics. Topics include differentiation with applications to rates and maximum and minimum values, integration techniques with applications to areas, cost, and rates.
*Prerequisite: MA 130.*

**MA 230** **3 cr. 3 hr.**
**Calculus I**
The derivative of a function, methods of differentiation and applications are studied.
*Prerequisite: MA 130 or its equivalent.*

**MA 240** **3 cr. 3 hr.**
**Calculus II**
The Riemann Integral, methods of integration, and applications are studied.
*Prerequisite: MA 230 or its equivalent.*

**MA 260 Linear Algebra**
Topics include vector spaces, linear transformations and matrices with applications.
*Prerequisite: MA 230.*

**MA 270** **3 cr. 3 hr.**
**Applied Statistics II**
A continuation of MA 170. Topics include estimation and testing, simple linear and multiple regression, analysis of variance, and nonparametric methods.
*Prerequisite: MA 170.*

**MA 280** **3 cr. 3 hr.**
**Business Statistics**
Topics include descriptive methods, probability distributions, estimation, testing, analysis of variance, and regression analysis.
*Prerequisite: MA 220.*

**MA 283** **3 cr. 3 hr.**
**Methods and Materials in Elementary Mathematics (Math Concepts)**
Topics from arithmetic, algebra, and geometry of the modern elementary school mathematics programs are studied. Attention is given to the structural and discovery approach.

**MA 300** **3 cr. 3 hr.**
**Geometry I**
A formal study of basic concepts in geometry and the foundations of Euclidean geometry. This course is for mathematics majors or minors and students with a mathematics specialization; all others need permission from the instructor.
*Prerequisite: MA 240, 260.*

**MA 310** **3 cr. 3 hr.**
**Discrete Algebraic Structures**
A study of discrete algebraic structures of interest in computer science. Topics include partial orders, Boolean algebra, graph theory and finite state machines.
*Prerequisite: MA 260.*

**MA 315** **3 cr. 3 hr.**
**Elementary Number Theory**
Properties of the integers are studied. Topics include divisibility, prime numbers, congruences, Diophantine equations and mathematical induction.
*Prerequisite: MA 150.*

**MA 320** **3 cr. 3 hr.**
**History of Mathematics**
The development of mathematical ideas and methods from ancient to modern times and their relevance to other fields of knowledge will be studied. This course is intended for mathematics majors, mathematics minors or mathematics specialists.
*Prerequisite: MA 240.*

**MA 325** **3 cr. 3 hr.**
**Probability and Statistics I**
A careful development of elementary probability theory with applications is followed by the study of discrete and continuous random variables including the binomial, Poisson, and normal.
*Prerequisite: MA 240.*

**MA 330** **3 cr. 3 hr.**
**Calculus III**
Conic sections, indeterminate forms, Taylor polynomials, infinite and power series, differentials and multiple integrals are studied.
*Prerequisite: MA 240.*

**MA 340** **3 cr. 3 hr.**
**Calculus IV**
The calculus of polar coordinates, parametric curves, vector-valued functions, quadratic surfaces and directional derivatives are studied. Double integrals in polar coordinates, line integrals and differential equations may also be considered.
*Prerequisite: MA 330.*

**MA 355** **3 cr. 3 hr.**
**Ordinary Differential Equations**
Linear first and second order differential equations, methods of solution and applications are studied. Series solutions and higher order linear equations are considered.
*Prerequisite: MA 260 and 330.*

**MA 360** **3 cr. 3 hr.**
**Introduction to Mathematical Logic**
An elementary introduction to classical and symbolic logic, including standard sentential and first order predicate calculi.
*Prerequisite: MA 150 or MA 230.*

***MA 405** **3 cr. 3 hr.**
**Topology**
Topics include point sets, metric spaces, topological spaces, connectedness and compactness.

**MA 415** **3 cr. 3 hr.**
**Advanced Multivariate Calculus**
The differential and integral calculus of vectorvalued functions and functions of several variables.
*Prerequisite: MA 340.*

**MA 420** **3 cr. 3 hr.**
**Real Variable Theory**
Rigorous treatment of the foundations of differential and integral calculus with such topics as the real numbers, continuity, metric and Euclidean spaces.
*Prerequisite: MA 260 and MA 330.*

**MA 425** **3 cr. 3 hr.**
**Probability and Statistics II**
Random variables and their probability distributions are used to study problems in estimation, hypothesis testing, regression, and analysis of variance.
*Prerequisite: MA 325.*

**MA 430** **3 cr. 3 hr.**
**Abstract Algebra I**
A study of algebraic structures including groups, rings, and fields.
*Prerequisite: MA 150 or consent of Instructor.*

**MA 440** **3 cr. 3 hr.**
**Operations Research**
Topics include linear programming, duality, networks, transportation problems, dynamic programming and stochastic models.
*Prerequisites: MA 260 and MA 330.*

**MA 445** **3 cr. 3 hr.**
**Mathematical Modeling**
Deterministic and probabilistic models from the physical, social and life sciences will be studied. The course will emphasize the uses of mathematics, rather than the acquisition of new mathematical knowledge. New mathematical ideas are introduced only when they aid in the study of a particular application.
*Prerequisites: MA 240, 260.*

**MA 450** **3 cr. 3 hr.**
**Numerical Analysis**
Numerical analysis is concerned with devising algorithms for approximating, the solutions to mathematically expressed problems. Topics will be chosen from: round-off error and computer arithmetic, solutions of algebraic and transcendental equations, interpolation and polynomial approximation, numerical differentiation and integration, solutions of ordinary differential equations, solutions of linear systems and approximation theory. Both mathematical rigor and computer solutions will be stressed.
*Prerequisites: MA 260, 330, programming ability in a numerical program language (e.g. Fortran, Pascal).*

**MA 485** **3 cr. 3 hr.**
**Methods and Materials in Secondary Mathematics**
Curriculum and pedagogy of secondary school mathematics are studied. The course includes a practicum of preprofessional experiences.
*Prerequisite: MA 240 and 260.*

**MA 486** **6 cr. 6 hr.**
**Practicum In Mathematics**
Students are assigned to cooperating schools for one-half semester of student teaching.
*Prerequisite: Permission of the department.*

**MA 487** **6 cr.**
**Practicum in Mathematics - II**
Students are assigned to cooperating schools for one-half semester of student teaching.
*Prerequisite: MA 486 and permission of the department.*

**MA 490 Independent Study**
*Prerequisite: Permission of department.*

**MA 493** **3 cr. 3 hr.**
**Topics in Mathematics**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under this title.
*Prerequisite: Permission of the Department.*

# Medical Technology

Program Director,
Professor:
*Rose Marie Neunherz*

Assistant Professor:
*Benjamin Andrusaitis*
*Dorothy Boisvert*

Instructors:
*Elizabeth Szymczak*
*Christine Vandreuil*

The medical technology program, leading to a B.S. in Medical Technology, offers students a challenging and interesting mix of both academic and applied courses. Students develop skills in the basic sciences that serve as the foundation upon which their clinical courses are built. During the first three years, students are introduced to the profession of laboratory science and the clinical courses necessary to practice in the profession. Skills are developed in well equipped, modern laboratories similar to those found in both hospital and industrial settings. During senior year, students take advanced courses in clinical science.

Liability insurance is required of all students enrolled in field-based or clinical courses, courses with practicum experiences, or courses otherwise deemed by the respective academic programs.

In order to remain in the program, students must maintain an overall cumulative average of 2.5 in the sciences as well as in each of the clinical courses.

Upon completion of the program, students find themselves well prepared to obtain positions in hospital, research, industrial, zoological, and private laboratories as well as to become sales and technical representatives for a variety of industrial corporations.

All students in the M.T. program are required to take the following courses:

*Biology*
BI 242 Human Physiology
BI 280 Genetics
BI 345 Biochemistry
BI 390 Microbiology
BI 481 Immunology

*Chemistry*
CH 110, 120 General Chemistry I, II
CH 200, 210 Organic Chemistry I, II
CH 350 Analytical Chemistry II

*Math*
MA 170 Applied Statistics

*Physics*
PH 115 Physics for Life Sciences, 120

*Medical Technology*
MT 100 Introduction to Medical Technology
MT 120 Medical Terminology
MT 140 Clinical Laboratory Techniques
MT 200 Basic Hematology
MT 300 Professional Issues
MT 320 Immunoassay
MT 340 Parasitology/Mycology/Virology
MT 360 Clinical Laboratory Data
MT 400 Clinical Hematology
MT 420 Clinical Chemistry
MT 440 Clinical Microbiology
MT 460 Immunohematology
MT 480, 485 Clinical Correlations I, II

**MT 100** **1 cr. 2 hr.**
**Introduction to Medical Technology**
Integrated lecture-laboratory course designed to acquaint the student with the role of the medical technologist, the duties of technologists, employment opportunities and educational requirements for the profession.

Laboratory includes introduction to techniques in hematology, clinical chemistry, immunohematology and clinical microbiology. 2 hrs. lecture lab per week plus additional hours for independent project.

**MT 120** **1 cr. 1 hr.**
**Medical Terminology**
Instructs students to interpret and define medical words by combining prefixes, suffixes, and root words.

**MT 140** **3 cr. 5 hr.**
**Clinical Laboratory Techniques**
Includes study of clinical laboratory's role in assessing the kidney in health and disease, microscopic and chemical analysis of urine taught with emphasis on correlation of test data to disease diagnosis. Techniques and theory of phlebotomy studied.
*Prerequisite: BI 242 or the permission of instructor.*

**MT 200** **3 cr. 5 hr.**
**Basic Hematology**
Composition, formation, and function of blood and blood cells will be explored; Routine and special hematology testing methodologies, coagulation principles and procedures will be discussed.
*Prerequisites: BI 242 or permission of instructor.*

**MT 300** **3 cr. 3 hr.**
**Professional Issues in Clinical Laboratory Science**
Economic, political, and social issues pertinent to health care delivery. Professional and personal ethics, interpersonal communication skills, interview techniques, career options for medical technologists, basic education and management strategies.
*Prerequisite: MT 100.*

**MT 320** **1 cr. 3 hr.**
**Immunoassay**
Study of in vitro antigen-antibody reactions; theory of serological reactions and practical application of theory to clinical laboratory testing, enzyme assays, immunoelectrophoresis, agglutination and precipitation tests studied and performed.
*Prerequisite: BI 481, BI 440.*

**MT 340** **4 cr. 6 hr**
**Parasitology/Mycology/Virology**
Life cycles, identification, and clincial pathology of parasites in man; common mycotic infections of man and methods of identification; overview of viral structure, oncogenesis, and viral infections of man.
*Prerequisite: BI 440*

**MT 360** **3 cr. 6 hr.**
**Clincial Laboratory Data Analysis**
Application of mathematical manipulations involved in the methodology, quality control, method evaluation and pathophysiological correlations of the clinical laboratory.
*Prerequisite: MA 170.*

**MT 400** **6 cr. 9 hr**
**Clinical Hematology**
Biology of human blood cells and hemostatic mechanisms. Laboratory tests useful in the detection and differential diagnosis of hematologic diseases performed.
*Prerequisite: MT 200.*

**MT 420** **8 cr. 11 hr**
**Clinical Chemistry**
Principles and techniques employed in clinical laboratories; preparation of solutions; care of equipment. Diagnostic tests performed on all body fluids utilizing manual and instrumental techniques. Theory of disease and interpretation of data stressed.
*Prerequisites: CH 210, 350, MT 360.*

**MT 440** **6 cr. 9 hr**
**Clinical Microbiology**
Isolation, identification, and propagation of pathogenic organisms; Bacteria and their clinical significance to man emphasized.
*Prerequisites: BI 440, MT 340.*

**MT 460** **4 cr. 6 hr**
**Immunohematology**
Theory and laboratory techniques in blood banking; common blood types, screening and preparation of donors, crossmatching, antigen-antibody reactions, and serological procedures.
*Prerequisites: BI 481, BI 280.*

**MT 480, 485** **1 cr. 2 hr.**
**Clinical Correlations**
Two semester seminar designed to demonstrate the interrelationships between clinical laboratory disciplines; case study approach utilized to help student integrate laboratory information.
*Corequisites: MT 400, 420, 440, 460.*

**MT 490**
**Independent Study**
Open to students who have permission of supervising instructor and department. Course of study, meetings, and project presentation by arrangement.

**MT 493** **3 cr. 3 hr.**
**Topic in Medicine**
Courses have a more narrow focus or those taught on an irregular basis may be offered.

New courses may be taught on an experimental basis under this title.

**MT 494**
**Internship**

# Military Science

Professor:
*LTC Paul Jones*

FSC Officer-in-Charge:
*MAJ. Raoul Archambault*

## *Introduction*

The U.S. Army Reserve Officers' Training Corps program is offered by Fitchburg State College. The purpose of the program is to prepare top-quality men and women to become commissioned officers in the U.S. Army, Army Reserve, or Army National Guard. Military Science is designed to complement other instruction offered by Fitchburg State and is integrated into the student's regular academic curriculum. The department offers numerous scholarship opportunities based solely on merit rather than financial need or lack there of.

## *Special Information*

The Reserve Officer Training program is based on a four year curriculum composed of a two year Basic Course (freshman and sophomore years) and a two year Advanced Course (junior and senior years). Students incur no obligation to the Army for participation in the Basic Course. A number of options are offered to meet the special needs of individual students and to provide flexibility within the program:

1. The traditional 4-year program during which the student would take MS courses during the academic year and attend one advanced summer camp between the third and fourth years.

2. The 2-year program designed especially for transfer students from non-ROTC schools, prior military service (National Guard, Army Reserve or Active Army), or those who did not complete all of the Basic Course requirements. In this case, qualified students attend a basic summer camp prior to their third year and then continue through their last two years as any other 4year ROTC student.

3. The third variation consists of a compressed program for students who feel they can complete their academic studies in three years. The recommended compression is to take both the first and second year military science subjects in one year but other arrangements can be made.

No military obligation is incurred for Basic Course subjects. Students contracted into the Advanced Course or who have a scholarship do incur an obligation which may be satisfied through service in the Active Army, National Guard or Army Reserve.

## *Basic Course*

The Basic Course includes the military science subjects taught during the first and second years. It introduces the student to the Army and the Army to the student. Since all effective leaders must understand the organization in which they will function, initial instruction is intended to create a working knowledge of ROTC and the Army. Basic Course offers FSC students the opportunity to learn about the U.S. Army and how it fits into society. The Basic Course is open to any FSC student with no military obligation being incurred. Several field trips are planned during each course.

## *Advanced Course*

The Advanced Course, taught during the third and fourth years, includes topics such as management theory, personnel counseling, ethics, professionalism and professional development, written and verbal communications, military law, law of war, and studies in military areas such as tactics. The objectives are to develop leaders; to give the student experience in organizing and then managing a project; to enable the student to take charge of any project and bring it to a successful conclusion. This acquired ability is useful in every human endeavor; it is essential to the military leader. In conjunction with the theoretical approach to leadership studied in class, students are required to apply their knowledge by participating in a weekly Leadership Laboratory. The Advanced Course is open to all students who have satisfactorily completed two years in the Basic Course or the equivalent.

A student enrolled in the Advanced Course receives an allowance of $100 a month, tax free, from the date of enrollment. To enroll in the Advanced Course, students must execute

a contract stating they will complete the program of instruction and accept a commission as a second lieutenant in the U.S. Army upon graduation and serve in the National Guard, Army Reserve or on active duty.

## *Leadership Laboratory*

The purpose of Leadership Laboratory is to give each cadet the opportunity to apply practically the theory learned during formal class periods. The senior cadets conduct the aboratory period with under-classmen filling subordinate roles, their degree of responsibility dependent on how far they have advanced in ROTC.

The Military Science Department encourages its cadets to participate in athletics and to join other extra-curricular activities in order to practice leadership theories learned in Military Science. In the event of schedule conflicts, training periods selected from intersession courses or active participation in one of the ROTC extracurricular activities may be substituted for the required training with prior ROTC advisor approval.

Attendance is mandatory for all scholarship and Advanced Course students. Basic Course students attend based upon the requirements established by their military academic instructor.

**MS 140** **1 cr. 1 hr.**
**Introduction to Army ROTC**
An introduction to the Army ROTC program. Its history, purpose, structure and method will be discussed. Leadership Management responsibilities of an officer are presented. Emphasis will be placed on ROTC and its relationship with the United States Army.

**MS 150** **1 cr. 1 hr.**
**Introduction to the United States Army**
An overview of the role of the "Total Army" within the framework of the national defense establishment. The integrated roles of the Active Army and the Reserve Components are examined. Emphasis is placed on the duties and responsibilities of the officer serving in the combat arms, combat support and combat service support branches.

**MS 200** **2 cr. 2 hr.**
**Land Navigation and Communications**
Students learn the basic fundamentals necessary to navigate and communicate. In Land Navigation, students identify terrain features, find locations, determine directions and plan routes. Maps, protractors, compasses, terrain boards and audio-visual aids are utilized extensively. In the communications portion of this course, students learn radio-telephone procedures, and how to communicate. Principles and techniques derived from this course have application to many other studies.

**MS 220** **2 cr. 2 hr.**
**Emergency Medical Treatment**
This course presents casualty evaluation, treatment and evacuation under emergency conditions. Injury prevention under different climatic conditions is stressed. Cardiopulmonary resuscitation (CPR) Technique is addressed.

**MS 310** **2 cr. 2 hr.**
**Advanced Theory of Unit Operations**
A continuing study of effective leadership in tactical operations, culminating the lessons learned during previous courses; examination of the theory and dynamics of the military team and its effective employment as part of the combined arms concept.
*Prerequisites: Completion of Basic Course or advanced placement credit granted by the Professor of Military Science.*

**MS 330** **2 cr. 2 hr.**
**Leadership**
A study of the psychology of leadership based on an organizational model. Emphasis is placed on individual, group, transactional and organizational factors that both a leader and manager need to consider in order to be maximally effective. The student is provided with the essentials for forming a creative, personal management and leadership philosophy for practical application in a real-world setting.
*Prerequisites: Completion of Basic Course or advanced placement credit granted by the Professor of Military Science.*

**MS 420** **3 cr. 3 hr.**
**Effective Communication**
An introduction to the military methods of instruction and basic teaching procedures. Effective speaking, listening, writing and military correspondence, and an emphasis on the interrelationship of staff and command assignments in the effective utilization of people and resources.

**MS 430** **3 cr. 3 hr.**
**Law, Ethics and Preprofessional Seminar**
This course provides the student with an introduction to Military Law and Military Professional Ethics. The role of the junior officer with regard to military law in the

practical setting of his/her initial assignment in an Army unit is examined. This course provides the Advanced Course cadet with a basic knowledge of the Army's organizational practices and philosophy. The role of the noncommissioned officer is reviewed along with the basics of line and staff functions. An overview of the Army's personnel management, training, and logistics systems, along with post and installation support organization and functions are presented as a Basic Course. *Prerequisites: Completion of Basic Course or advanced placement credit granted by the Professor of Military Science.*

# Music

Chairman: *Richard DeCesare*
Professor: *Harry Semerjian*
Assoc. Professor: *Frank Patterson*

Asst. Professor: *Lillian Fagerholm*

## *The Minor in Music*

The minor in Music will require 18 semester hours. Students must take the following:

Art of Music I
or
Commonwealth of the Arts
Basic Music Theory
Harmony I
Choral Arts
or
Instrumental Arts

The remaining 6 semester hours may be taken from approved music electives. All education majors selecting the music minor must elect Music in Elementary Education. All minor candidates must pass a first-year piano examination.

*Asterisk indicates that the course is offered infrequently.

**MU 100** **3 cr. 3 hr.**
**Art of Music**
Music as aesthetic experience. Representative styles and categories from the Middle Ages to the present. Students are required to attend professional concerts.

**MU 200** **3 cr. 3 hr.**
**Commonwealth of the Arts (formerly Art of Music II)**
Music's reflection of the values and ideals of societies past and present. Interrelationships between the fine arts.

**MU 220** **3 cr. 3 hr.**
**Basic Music Theory**
Rhythmic notation including meters and tempo. Melodic notation, including intervals, scales, and keys. Dynamics, an introduction to key relationship, transpositions, as well as other selected topics. No prerequisites.

***MU 230** **3 cr. 3 hr.**
**Music Through the Compositional Approach**
Students will encounter music through a series of creative projects in varied musical forms. Students must have ready use of a tape recorder and their own tapes.
No prerequisites.

**MU 310** **3 cr. 3 hr.**
**Symphony**
Structural and stylistic characteristics of the symphony from the 18th century to the present.

**MU 320** **3 cr. 3 hr.**
**Opera**
Several works from the standard operatic repertoire. Some significant trends in modern opera.

***MU 330** **3 cr. 3 hr.**
**Chamber Music**
A survey of music written for small ensembles.

**MU 340** **3 cr. 3 hr.**
**Twentieth-Century Music**
The idioms and aesthetic notions of the present century, together with their relationship to the past.

**MU 350** **3 cr. 3 hr.**
**American Music**
American music from colonial times, with some emphasis upon "popular" and "Art" music of the present century in the U.S.

**MU 360** **3 cr. 3 hr.**
**Baroque and Classical Music**
Monteverdi to Beethoven. Opera, oratorio, passion, cantata, sonata forms, dance forms, shifting aesthetic views.

**370** **3 cr. 3 hr.**
**Romantic Music**
A survey of major forms of 19th century music from Beethoven to Mahler.

**MU 400** **1 cr. 2 hr.**
**Choral Arts**
Singing choral music past and present, including dramatic music. No more than 6 semester hours applicable toward graduation. Available for audit. (See MU 410.)

**MU 410** **1 cr. 2 hr.**
**Instrumental Arts**
Small and large ensemble playing of representative works for instruments including band and jazz ensemble literature. No more than 6 semester hours of MU 410 or any combination of MU 410 and MU 400 applicable toward graduation. Available for audit.

**MU 420** **1 cr. 2 hr.**
**Class Piano**
Practical keyboard usages in classroom work: accompaniment, simple transposition, harmonizaion of melodies at the keyboard.

**MU 430** **1 cr. 2 hr.**
**Class Voice**
Principles of voice production. Breath control, phrasing, resonance, and diction are stressed.

***MU 440** **3 cr. 3 hr.**
**Song**
Popular, folk, and art songs of many nations.

**MU 450** **3 cr. 3 hr.**
**Harmony I**
Harmonizations of simple melodies. Principles of modulation and key relationships.

***MU 451** **3 cr. 3 hr.**
**Harmony II**
Further work in modulation. Chromaticism. 19th and early 20th century developments. *Prerequisite: MU 450 or equivalent.*

***MU 470** **3 cr. 3 hr.**
**Compositional Techniques**
Working with small musical forms. Traditional devices like sequence, ostinato, motivic development. Freer forms.

***MU 471** **3 cr. 3 hr.**
**Musical Production**
Workshop approach to producing and rehearsing opera, operetta musical comedy.

**MU 480** **3 cr. 4 hr.**
**Music in Elementary Education**
The objectives and techniques of teaching music in the first six grades.

**MU 490 Independent Study in Music**

**MU 493** **3 cr. 3 hr.**
**Topics in Music**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under this title.

# Nursing

Chairman:
*Rita Driscoll*

Professors:
*Rita Driscoll*
*Sheila Fredette*
*Barbara Madden*

Assoc. Professors:
*Lillian Bannon*
*Elizabeth May*
*Katharine O'Connor*
*Tanya Ratney*

Asst. Professors:
*Virginia Doyle*
*Elizabeth Fisk*
*Sophia Harrell*
*Catherine Humphreys*
*Barbara May*
*Linda McKay*
*Jane Minasian*
*Eileen O'Neill*
*Rowena Taylor*
*Andrea Wallen*

Instructors:
*Michelle Brady*
*Sarah Hitchcock*
*Carol Picard*
*Elizabeth Shaw*
*Richard Trifilo*
*A. Lynne Wagner*
*Jean Worfolk*

Part-Time Instructors:
*Belinda Asano*
*Sandra Austin*
*Gail Consolatti*
*Katharine Gimbel*
*Jean Kressy*
*Barbara MacDonald*
*Marianne MacLean*
*Mildren Marion*
*Judith Mizhir*
*Barbara Powers*
*Helen Rogers*

## *Introduction*

As the first department of nursing in the State College System, the nursing program has a long and proud history. It is fully approved by the Board of Registration in Nursing and fully accredited by the National League for Nursing through its Council of Baccalaureate and Higher Degree Programs. It supports both a chapter of Sigma Theta Tau, the International Nursing Honor Society, and a chapter of the National Student Nurses Association. It provides not only newly-renovated laboratories for on-campus practice of clinical skills with computer and audiovisual support, but also a wide variety of client care opportunities in affiliated health care agencies. Its graduates are in great demand in the professional job market, and many have progressed to leadership positions in practice, administration, research, and education.

## *Aims and Objectives*

The purpose of the Fitchburg State College program in nursing is to prepare practitioners of professional nursing who can assume responsibility for planning and providing

health care to individuals, families, groups, and communities in collaboration with other health professionals and who have the foundation for graduate study in nursing.

## *Admissions and Retention*

The majority of departmental admissions are freshmen selected from qualified high school graduates. The Department also admits transfer students who are not licensed nurses who meet the prerequisites for the sophomore year courses, as well as registered nurses who meet the prerequisites of the alternative junior year. The department uses individual academic and personal advising by nursing faculty, referrals to campus services, and internal departmental resources to provide majors with assistance to meet the progression requirements and achieve success in the program. A planned five-year sequence of courses for students who need or wish to decelerate their progress is available.

## *The Major*

The degree offered is the Bachelor of Science with a major in nursing. Graduation requires a minimum of 125 semster hours of credit comprised of 63 credit hours of nursing, 38 hours of required and 24 hours of elective liberal arts and sciences credits. Each semester of nursing after the pre-nursing freshman year includes a clinical/laboratory component as well as classroom theory. A variety of in-patient and community agencies in central and eastern Massachusetts offer practice opportunities to assist students toward professional competency.

Registered nurses are provided with a variety of opportunities to achieve advanced placement in liberal arts and science courses and in nursing via the CLEP program, College examinations and nursing exemption examinations prior to senior year status. All senior students in their final experience select an area of nursing practice for concentrated study in accordance with individualized learning objectives.

Part-time study is available to majors in lower division course work and to registered nurse students.

No minors are offered in the Department of Nursing. Within the planned progression sequence, it is not feasible for nursing majors to elect a minor in another department.

## *Special Information*

As a professional preparation program, successful progress in the major necessitates requirements in addition to those common to all College students: 1) students are subject to the probation and suspension schedule for quality point average in overall course work, and also for course work in the major in order to progress to the subsequent nursing courses; 2) students on academic probation in nursing cannot be admitted to NS470, to or to any elective course in nursing; 3) students are responsible for providing their own transportation to clinical practice sites; and 4) students must present yearly evidence to the Department of Nursing of liability insurance coverage at the requisite level, CPR certification, Massachusetts licensure (if applicable), and health clearance including TB screening prior to participation in any clinical experience. Commonwealth of Massachusetts regulations regarding health records for students enrolled in the health sciences must be met through the campus Health Service office.

## *Courses for the Class of 1991*

**NS 000** **0 cr. 1.5 hr.**
**Preparation for Entry into Practice**
An elective, senior level preparation for the licensure examination. Includes in-depth self-assessment of nursing knowledge, test taking strategies and examination simulations.

**NS 101** **1 cr. 1 hr.**
**Introduction to Nursing**
Role of professional nurses within the health care system. The nurse as a promoter of health, differing views of health and illness. Open to all majors.

**NS 200** **2 cr. 2 hr.**
**Scientific Foundations for Nursing Interventions I**
Basic alterations in health and physiology underlying nursing assessment, diagnosis and intervention.
*Prerequisites: BI 120, and 130, CH 140.*

**NS 210** **2 cr. 2 hr.**
**Scientific Foundations for Nursing Interventions II**
Continuation of concepts of health alterations in NS 200.
*Prerequisite: NS 200.*

**NS 220** **2 cr. 2 hr.**
**Nutritional Foundations for Nursing Interventions**
Concepts from nutrition science applied to self-care and client care. Collaborative roles of nurse and dietitian explored.
*Prerequisites: BI 130 and CH 140 or permission of instructor.*

**NS 270** **5 cr. 9 hr.**
**Nursing Process with the Well Client I**
Deals with theoretical and methodological nursing concepts for practice with well clients. Practice opportunities offered in psychomotor skills and either physical assessment, or support of the healthy developing family, or maternity in-patient care.
*Prerequisites: EN 120, PY 110, SO 110, BI 120 and 130, CH 140, NS 101*

**NS 280** **5 cr. 9 hr.**
**Nursing Process with the Well Client II**
Continuation of NS 270. Practice opportunities consist of the remaining experiences listed in NS270.
*Prerequisites: NS 200, 220, and 270, PY 220.*

**NS 300** **2 cr. 2 hr.**
**Women and Health Care**
Elective, open to non-majors, presents past, present and future rules of women in the health care system. Sexism, feminism's impact of health care, and current women's health care issues addressed.

**NS 130** **2 cr. 2 hr.**
**Pharmacological Basis for Nursing Interventions**
Focus on interrelationships between drug action, disease process, and client characteristics. Principles of pharmacology and medication administration issues stressed.
*Prerequisites: NS 210*

**NS 320** **2 cr. 2 hr.**
**Health Promotion in the Child From a Developmental Perspective**
Elective, open to non-majors, discusses major components of preventive health care in children. Planning for the maintenance and promotion of health.
*Prerequisite: PY 220.*

**NS 370** **10 cr. 18 hr.**
**Nursing Process with Clients experiencing Health Alterations I**
Assisting clients towards restoration of health or towards adaptation to health alterations. Health alterations of significant morbidity and mortality and therapeutic modalities addressed. Practice opportunities offered in selected acute care facilities
*Prerequisites: NS 280, NS 210, BI 270*

**NS 380** **10 cr. 18 hr.**
**Nursing Process with Clients experiencing Health Alterations II**
Continuation of nurse's role in restoration and adaptation. Additional acute care opportunities offered.
*Prerequisite: NS 370, NS 310.*

**NS 400** **2 cr. 2 hr.**
**Nursing Research**
Identification and exploration of researchable problems in nursing. Prepares student as a knowledgeable research consumer.
*Prerequisite: MA 170, senior's status.*

**NS 410** **2 cr. 2 hr.**
**Holistic Health: Alternative Approach to Health Care**
An elective focusing on integration of mind, body, spirit, and environment. Aspects of modern medical science and valid alternatives, general approaches, and specific modalities presented.
*Prerequisite: NS 360 or NS 380*

**NS 440** **2 cr. 2 hr.**
**Holistic Care of the Person with Cancer**
An elective using the paradigm of a person with cancer to synthesize nursing theory and to examine clients' holistic needs. Concepts from research, nursing, and related sciences used.
*Prerequisite: NS 370*

**NS 470** **10 cr. 20 hr.**
**Nursing Process with Families and Groups in Community Settings**
or
**NS 471** **5 cr. 10 hr.**
and
**NS 472** **5 cr. 10 hr.**

Professional nursing practice using systems concepts to deal with the health of families, groups, and communities on primary, secondary, and tertiary levels. Practice opportunities in a variety of distributive care settings.
*Prerequisites: NS 380*

**NS 480** **12 cr. 28 hr.**
**Nursing Process in a Selective Practicum**
or
**NS 481** **6 cr. 14 hr.**
and
**NS 482** **6 cr. 14 hr.**
Opportunity for in-depth exploration of interest areas in nursing. Preceptorship model

used to facilitate increased independence in professional practice.
*Prerequisites: NS 400 and NS 470*

## *Courses for the Classes of 1989-90*

**NS 350** **6 cr. 9 hr.**
**Concepts of Nursing I**
Advanced course for registered nurses. Working with clients to broad perspectives of professional nursing through demonstration of use of nursing process.
*Prerequisites: Two of the eight-credit nursing exemption examinations.*

**NS 360** **6 cr. 9 hr.**
**Concepts of Nursing II**
Critical thinking and theories of nursing and health are developed through practice with clients in self-selected settings.
*Prerequisite: NS 350.*

**NS 370** **12 cr. 20 hr.**
**Nursing Interventions: Concept and Practice I**
Humans as bio-psycho-social beings. Concepts and theories of nursing and health needed to stabilize the human internal environment. Clinical practice in a variety of settings.
*Prerequisites: NS 280, NS 285, PY 220, MA 170, BI 270.*

**NS 380** **12 cr. 20 hr.**
**Nursing Intervention: Concept and Practice II**
Continuation of NS 370. Health, nursing, and internal environments further explored.
*Prerequisite: NS 370.*

**NS 420** **2 cr. 2 hr.**
**Contemporary Professional Issues**
Identification, exploration and discussion of critical issues and trends in nursing. Professional rights, responsibilities, organizations, and practice and employment opportunities. Offered concurrently with NS 470.

**NS 470** **10 cr. 16 hr.**
**Nursing in Society: Concepts and Practice**
or
**NS 471** **5 cr. 7 hr.**
and
**NS 472** **5 cr. 9 hr.**
Systems theory, the nursing process, groups, families, and community are framework. Holistic approach to assess interdependence between clients' health and environment. Intervention on primary, secondary and tertiary levels.
*Prerequisites: NS 380 or NS 360 and all other noted prerequisites and exemption examinations.*

**NS 480** **12 cr. 28 hr.**
**Nursing: Selective Practicum**
or
**NS 481** **6 cr. 14 hr.**
and
**NS 482** **6 cr. 14 hr.**
In-depth exploration of complex nursing care. Opportunity to study clinical area of particular interest. Critical thinking, research, leadership, and communication skills encourage synthesis of nursing knowledge through guided clinical experiences.
*Prerequisites: NS 420, NS 470*

# Philosophy

Chairman: *Richard DeCesare*
Professors: *James Colbert*, *Richard DeCesare*, *Walter Jeffko*
Assoc. Professor: *Richard Glidewell*

**Philosophy Minor**
The Philosophy Minor requires 15 semester hours. There is a pre-requisite of PL 100 or PL 310. Courses for the minor must include a) either PL 331 or PL 332 and PL 359 or PL 361; b) at least one course from the following: PL 340, 350, 360, 420, 450 and 466, and c) two additional philosophy courses.

*Asterisk indicates that the course is offered infrequently

**PL 100** **3 cr. 3 hr.**
**Introduction to Philosophy**
An introduction to the problems, methods, and goals of classical and contemporary Western Philosophy. Emphasis is placed upon how these differ from and relate to other fields of human knowledge.

**PL 300** **3 cr. 3 hr.**
**Philosophy of Education**
This course seeks to trace the origin and development of major educational theories and their contemporary implications.
*Prerequisite: PL 100*

**PL 310** **3 cr. 3 hr.**
**Logic**
An introduction to logical thinking from the perspective of both traditional and modern logic. The following topics are covered: difference between deduction and induction, language and definition, fallacies, categorical propositions, categorical syllogisms,

deductive arguments in ordinary language, and selected topics in symbolic logic.

***PL 320** **3 cr. 3 hr.**
**Theories of Knowledge**
The problems and methods of human knowledge. Theories presented in the light of idealism, realism, pragmatism, and existentialism.
*Prerequisite: PL 100.*

***PL 330** **3 cr. 3 hr.**
**Metaphysics**
Introduction to the origin and development of metaphysical problems in Western Philosophy.
*Prerequisite: PL 100.*

***PL 331** **3 cr. 3 hr.**
**Ancient Philosophy**
A study of the beginnings of Western Philosophy, including the Pre-Socratics, Plato, Aristotle, and several other figures of the period.
*Prerequisite: PL 100.*

***PL 332** **3 cr. 3 hr.**
**Medieval Philosophy**
Includes St. Augustine, Boethius, Albertus Magnus, Avicenna, Averroes, Maimonides, and St. Thomas, and their influence upon subsequent philosophy.
*Prerequisite: PL 100.*

***PL 333** **3 cr. 3 hr.**
**Modern Philosophy**
Trends of modern thought since the Renaissance, including Descartes, Locke, Spinoza, Leibniz, Hume, Kant, and Hegel.
*Prerequisite: PL 100.*

**PL 334** **3 cr. 3 hr.**
**Contemporary Philosophy**
An examination of some current trends and issues in contemporary American, British, and European philosophy.
*Prerequisite: PL100.*

**PL 340** **3 cr. 3 hr.**
**Contemporary Ethical Systems**
Moral experience and reflective ethics; survey and critical evaluation of major ethical theories; ethics and science.

**PL 350** **3 cr. 3 hr.**
**Contemporary Ethical Problems**
Application of ethical thinking to some of today's major social and personal issues including crime and punishment, civil disobedience, prejudice and discrimination, sex, abortion, war, and suicide and death.

**PL 360** **3 cr. 3 hr.**
**Philosophy of Man**
An exploration of human nature or personhood from the triple perspectives of philosophy, religion, and behavioral science, focusing upon the following thinkers and movements; Plato, Christianity, early modern indivdualism, Marxism, Freud, existentialism, Frankl's logotherapy, Skinner, Fromm's humanism and personalism.

***PL 400** **3 cr. 3 hr.**
**Existentialism**
Origin of contemporary existentialism; its leading ideas as seen in writings of such philosophers as Kierkegaard, Jaspers, Marcel, Sartre, and Camus.
*Prerequisite: PL 100.*

**PL 410** **3 cr. 3 hr.**
**Philosophy of Art**
An examination of the interpretations of aesthetic experience presented by such thinkers as Aristotle, Tolstoy, Shiller, Bergson, Spengler, and Dewey.
*Prerequisite: PL 100.*

**PL 420** **3 cr. 3 hr.**
**Political and Social Philosophy**
The various political and social ideas beginning with Plato and continuing to Marx.
*Prerequisite: PL 100.*

**PL 430** **3 cr. 3 hr.**
**Philosophy of Science**
An analysis of the methods and goals of the physical sciences, how they differ from the social sciences, and the philosophic problems encountered in scientific pursuits.

**PL 440** **3 cr. 3 hr.**
**Philosophy of Language**
The role played by language in human knowledge and the increased emphasis on the analysis of language in recent philosophy.
*Prerequisite: PL 100.*

***PL 443** **3 cr. 3 hr.**
**Marxism**
A study of Marx's thought, its origins, development, and contemporary applications.
*Prerequisite: PL 100.*

***PL 444** **3 cr. 3 hr.**
**Early American Philosophy**
A study of American thought from the Colonial Period through 19th century.

***PL 445** **3 cr. 3 hr.**
**Contemporary American Philosphy**
an examination of the current trends and issues in American thought.

**PL 450** **3 cr. 3 hr.**
**Philosophy of Love**
An analysis of the concept "love" as employed in the social and moral philosophies of various classical and contemporary thinkers.
*Prerequisite: PL 100.*

***PL 460** **3 cr. 3 hr.**
**Philosophy of Religion**
The God-problem and religious experiences as seen in the classical philosophers and in the philosophies of existentialism and pragmatism.
*Prerequisite: PL 100.*

**PL 461** **3 cr. 3 hr.**
**Comparative Religious Experiences**
This course studies the principal religions of mankind: Buddhism, Islamism, Judaism, and Christianity; their basis tenets and insights into spiritual values.

**PL 465** **3 cr. 3 hr.**
**Man and Nature I**
This course is based, in part, on the Ascent of Man film series by Jacob Bronowski. It covers a broad range of topics centering on those discoveries, ideas, and events which have been crucial to the development of modern civilization. The origin of man, ancient civilizations, early mathematics and astronomy are among the topics covered.

**PL 466** **3 cr. 3 hr.**
**Man and Nature II**
A continuation of PL 465 covering the period from the trial of Galileo to the present, dealing with such topics as evolution, nuclear physics, the theory of relativity, and the human brain.

**PL 468** **6 cr. 6 hr.**
**Adventures in Ideas**
A two semester course which studies the major ideas of Western man and their influence on our lives and our thoughts. Each semester several basic modes of thought are studied and the class explores how each idea manifests itself in literature, science, philosophy, etc. Classes are combinations of lecture and group discussion with considerable emphasis placed on individual student exploration of these major ideas.

**PL 490**
**Independent Study**
Open to students who have permission of the supervising instructor and the department. Course of study, meetings, and credit by arrangement.

**PL 491** **3 cr. 3 hr.**
**Seminar Special Topics**

**PL 492** **3 cr. 3 hr.**
**Topics in Philosophy**
Courses having a more narrow focus of those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under this title.

# Physical Education

Chairman:
*Thomas Battinelli*

Professors:
*Thomas Battinelli*
*Lee N. Cunningham*

Asst. Professors:
*David Antaya*
*Joyce Downey*
*Barbara Nole*
*James Sheehan*
*Caryl Sickul*

The Physical Education Program is aimed at the development of student knowledges and competencies in the areas of exercise, health, recreation, and dance. The goals of the program generally endeavor to:

1. Increase student knowledges, understandings, and competencies in the areas of health and fitness.
2. Provide opportunites for student participation in a variety of physical activities for the development of fitness and recreational skills for present and future use.
3. Provide and increase opportunities for students to develop professional competencies through interdepartmental program concentrations as alternate fields of interest.

The Physical Education programs in Exercise Science, Physical Education, Recreation, and Dance are designed to provide students with an opportunity to pursue:

1. Study in alternative field of interest.
2. Prerequisite study for further graduate work.

## *Biology/Exercise Science Track*

**Exercise Science Course Requirements (12)**
PE 412 Biomechanics of Sport (3)

PE 404 Behavioral Concepts of Sport (3)
PE 307 Exercise and Sport Science (3)
BI 495 Internship (3)

## *Education/Physical Education Minor**

**Physical Education Professional Course Requirements (12)**
PE 307 Exercise and Sport Science (3)
PE 403 Physical Education: An Overview (3)
PE 404 Behavioral Concepts of Sport (3)
PE 308 Scientific Foundations of Athletic Training and Conditioning (3)
Physical Activity Course Requirements (6)

* For Education (Elementary and Secondary) and Human Services Majors. Majors in Human Services may substitute Recreational Leadership (PE 401) and Camp Counseling (PE 402) in place of Behavioral Concepts of Sport and Scientific Foundations of Athletic Training and Conditioning.

## *Human Services / Recreation / Dance Specializations*

**Specialization I**
**Recreation** **16 credits**

**Professional Course Requirements (12)**
PE 406 Outdoor Education (3)
PE 411 Programs in Recreation (3)
PE 401 Recreational Leadership (3)
Recreational Management (proposed) (3)

**Physical Activity Course Requirements (4)**
PE 028 Orienteering (1)
PE 108 Backpacking (1)
PE 020 Cross-Country Skiing (1)
PE 025 Cycling (1)
PE 017 Introduction to Mountain Hiking (1)
PE 015 Canoeing (1)
PE 030 Recreational Sports (1)
PE 013 Dance Aerobics (1)
PE 021 Modern Jazz (1)

**Specialization II**
**Dance** **16 credits**

**Professional Course Requirements (12)**
PE 405 Art of Dance (3)
PE 407 Introduction to Dance Movement Therapy (3)
PE 413 Making Dances Choreography and Composition (3)
PE 410 Movement Education (3)
**Physical Activity Course Requirements (4)**
PE 026 Contact Improvisation (1)
PE 027 Creative Movement (1)
PE 013 Dance Aerobics (1)
PE 021 Modern Jazz I (1)
PE 022 Modern Jazz II (1)
PE 023 Modern Jazz III (1)
PE 031 Afro Jazz Dance (1)

**Specialization III**
**Recreation/Dance (16)**
**Professional Course Requirements (12)**
PE 411 Programs in Recreation (3)
PE 401 Recreational Leadership (3)
PE 407 Introduction to Dance Movement Therapy (3)
PE 413 Making Dances (3)
**Choreography and Composition**
**Physical Activity Course Requirements (4)**
PE 018 Backpacking (1)
PE 015 Canoeing (1)
PE 020 Cross Country Skiing (1)
PE 025 Cycling (1)
PE 017 Introduction to Mountain Hiking (1)
PE 028 Orienteering (1)
PE 030 Recreational Sports (1)
PE 026 Contact Improvisations (1)
PE 027 Creative Movement (1)
PE 013 Dance Aerobics (1)
PE 021, 022 or 023 Modern Jazz 1, II, or III (1)
PE 031 Afro Jazz Dance (1)

## *Health and Fitness Requirement*

In order to meet the Health and Fitness requirement, students may select one of the following options: one course from Option I, three courses from Option II, or two courses from Option II and one from Option III.

## *Option I*

**PE 100** **3 cr. 3 hr.**
**Health and Fitness**
A basic survey of the effects of diet, exercise and selected environmental agents upon human, mental and physical health. Topics may include body build and body composition, fitness evaluation and programming, nutritional considerations, psychological correlates of health, chemical alterations, human sexuality, and personal and public health.

**PE 305** **3 cr. 3 hr.**
**Adaptations**
The human organism is examined in terms of its adaptation to acute and chronic stress. Physiological responses to such stressors as exercise, heat, and darkness, altitude and nutrition are studied theoretically and in a laboratory setting.

**PE 306** **3 cr. 3 hr.**
**Body Build and Physical Performance**
This course is designed to provide students with an overview of the field of body build relative to structure, size, and composition and the study of exercise, nutrition, and heart disease. Body build and body composition assessments will be made, exercise prescriptions and programs will be developed, and prevalent controversies in the areas of nutrition and heart disease will be examined.

**PE 307** **3 cr. 3 hr.**
**Exercise and Sport Science**
Basic exercise physiology is explored as it relates to the health professions. Theoretical topics include orientation to exercise, movement and energy production, neurological aspects of movement, and circulatory, respiratory, and hormonal factors in exercise. Practical topics include: cardiovascular stress testing, nutrition and weight control, physique and body composition, fitness, programming, the female in sports, the influence of activity on growth, evaluation of muscular strength, respiratory responses to exercise, and environmental effects such as altitude and temperature.

**PE 308** **3 cr. 3 hr.**
**Scientific Foundations of Athletic Training and Conditioning**
A course designed to discuss the principles of injury prevention and care, the physiology of training and nutritional considerations as they apply to athletics.

**PE 309** **3 cr. 3 hr.**
**Jogging: Theory and Practice**
The scientific basis for cardiovascular training programs using jogging as the mode of activity will be presented. Pre and post cardiovascular and body compostiion evaluations and individualized jogging programs will be designed.

## *Option II*

**PE 200** **1 cr. 2 hr.**
**Psychology of Sport**
A basic overview of the psychological impacts of sport upon participants and spectators. The areas of winning and losing, competition behavior modification, women in sport, and the study and analyzation of reaction profiles will be used in the observation of emotional behaviors.

**PE 201** **1 cr. 2 hr.**
**The Cardiovascular System and Exercise**
The preventitive aspects of endurance exercise and nutrition as related to the cardiovascular system will be studied in a lecture-laboratory format. Each student will be tested before and after a cardiovascular training program using a series of assessment techniques which will include an exercise ECG, estimated maximal oxygen consumption, blood pressure, lung function, muscular strength, flexibility and body composition.

**PE 202** **1 cr. 2 hr.**
**Introduction to Kinesiology**
An overview of the study of the mechanics of human motion will be presented. This course is designed to integrate kinesiological principles to the teaching of selected motor activities.

**PE 203** **1 cr. 2 hr.**
**Consumer Health**
This course is designed to help the student evaluate health information critically, and select products and services wisely. The past, present, and future of quackery will be explored especially in the areas of food, cosmetics, and chronic disorders. Laws and protection agencies, governmental and private, will be surveyed.

**PE 204** **1 cr. 2 hr.**
**Diet, Exercise and Weight Control**
The course is designed for those interested in weight loss or weight maintenance through the medium of diet and exercise. After an initial assessment of body composition, endurance fitness and the establishment of dietary goals, each student will work toward the normalization of body weight through actual programs of exercise and diet.

**PE 205** **1 cr. 2 hr.**
**Sports Concepts**
Physical activity skills for team sports will be viewed from the physiological and values perspective. Students will practice physical activity and value techniques.

**PE 206** **1 cr. 2 hr.**
**Controversies in Nutrition**
This course is designed to study the nutritional issues prevalent today. The available evidence will be presented to explain, clarify, and summarize the positions taken by investigators in the field.

**PE 207** **1 cr. 2 hr.**
**Figure Control Through Weight Training**
The theory of weight training and diet in relation to figure control will be discussed.

Each student will have physique, body composition, aerobic fitness and muscular strength evaluations before and after a weight training program.

**PE 208** **1 cr. 2 hr.**
**Weight Training for Athletes**
Theory for the development of muscular strength for specific athletic activities. Anthropometric, body composition, and muscular strength evaluations will be undertaken prior to and following an individually developed weight training program.

**PE 209** **1 cr. 2 hr.**
**First Aid and Safety**
A behaviorally oriented course structured for those responsible for the safety and protection of others. Official Red Cross certification will be issued upon satisfactory completion of course.

**PE 210** **1 cr. 2 hr.**
**Physical Education for the Orthopedically Handicapped**
The course will include an overview of congenital, postural, and degenerative orthopedic problems. It is designed to aid the student plan suitable corrective exercises and activity programs for people with these special needs.

**PE 211** **1 cr. 2 hr.**
**Techniques of Road Racing**
The purpose of the course is to acquaint the student with various topics of running long distance road races. Topics include the physiology of running, training strategies, injury care and prevention, nutritional aspects and methods of assessing running ability. Each student will undertake a training program, serve on a committee to organize a road race and participate in three road races.

## *Option III*

Activity courses are taught on a semester basis. Each semester carries 2 clock hours and 1 credit.

PE 001 Basketball
PE 002 Volleyball
PE 003 Softball
PE 004 Tennis
PE 005 Advanced Tennis
PE 006 Badminton
PE 007 Karate
PE 008 Judo
PE 009 Gymnastics
PE 010 Slimnastics
PE 011 Rhythmics
PE 012 Aerobics
PE 013 Dance Aerobics
PE 014 Folk Dance
PE 015 Canoeing
PE 016 Tumbling
PE 017 Introduction to Mountain Hiking
PE 018 Backpacking
PE 019 Downhill Skiing
PE 020 Cross Country Skiing
PE 021 Modern Jazz I
PE 022 Modern Jazz II
PE 023 Modern Jazz III
PE 024 Horseback Riding
PE 025 Bicycle Touring
PE 026 Contact Improvisation (Movement/Dance)
PE 027 Creative Movement
PE 028 Orienteering
PE 029 Soccer
PE 030 Recreational Sports
PE 031 Afro Jazz Dance

## *Professional Courses*

***PE 400** **3 cr. 3 hr.**
**Fundamentals of Coaching**
An analysis of the principles and practices of coaching in various sports will be presented for the prospective teacher-coach.

**PE 401** **3 cr. 3 hr.**
**Recreational Leadership**
The organization and administration of recreational activities will be presented in reference to the development of the principles and practices in both school and community programs. Leadership experience with school and community programs will also be offered.

***PE 402** **3 cr. 3 hr.**
**Camp Counseling**
Course content provides an opportunity to study some of the problems in the field of camping, to acquire skills essential in camp life and to develop leadership in individual and group work.

**PE 404** **3 cr. 3 hr.**
**Behavioral Concepts of Sport and Fitness**
This course is designed to provide students with an overview of the field of sport psychology and the study of motor learning and performance. The behavioral concepts of personality, motivation, aggression, and leadership common to sports and fitness will be examined. Motor learning theory and the factors and processes related to skill acquistion will also be covered.

**PE 405** **3 cr. 3 hr.**
**Art of Dance (Humanities Credit)**
This course offers students the opportunity to experience dance aesthetically and kinesthetically. Representative style forms from tribal dance through the Renaissance period to the present will be covered. Films, movement labs and concerts will also be included.

**PE 406** **3 cr. 3 hr.**
**Outdoor Education**
This course is designed to explore the use of the outdoors as a medium in the educational process. Topics will include: introduction to outdoor education, teaching methodology, basic principles of high adventure activities, school camping and outdoor education programs.

**PE 407** **3 cr. 3 hr.**
**Introduction to Dance Movement Therapy**
The purpose of this course will be to study dance therapy through movement processes designed to further physical, emotional, and spiritual integration. Kinesthetic principles and practices will be explored through structured and improvised movement experiences. EffortShape Analysis and Chase-Movement Therapy techniques will be utilized to enable students to increase their movement ranges, discover their own movement preferences, and develop leadership skills.

**PE 408** **1 cr. 2 hr.**
**Physical Education in the Elementary School**
A theory and practice course designed to guide the classroom teacher in organizing a comprehensive program of physical education activities.

**PE 409** **3 cr. 3 hr.**
**Officiating Basketball and Volleyball**
The philosophy and techniques of officiating basketball and volleyball for women, DGWS rules are used for both sports, and an opportunity is presented to take the written and practical national examination to obtain a rating in either or both sports.

**PE 410** **3 cr. 3 hr.**
**Movement Education**
Movement Education is a theoretical and an experiential course designed for working with the creative process in an interdisciplinary manner. The relationship of movement in developmental processes will be explored. Movement experiences, group leadership, curriculum development and evaluation will be covered.

**PE 411** **3 cr. 3 hr.**
**Programs in Recreation**
This course is designed to acquaint students with different types of programs in the recreation field. The development of traditional and innovative programs will be explored and evaluated. Topics will include: program foundations, traditional and innovative curricula, program planning, implementation and evaluation.

**PE 412** **3 cr. 3 hr.**
**Biomechanics of Sport**
The study of human motion in relation to anatomical and mechanical concepts. Specific sport and exercise activities will be studied based upon these considerations using video tape and film analysis.

**PE 413** **3 cr. 3 hr.**
**Making Dances: Choreography and Composition (Humanities Credit)**
Opportunities to develop and analyze the architectural structure and imagery content of dances and music through effort/shape theory. Each participant will work improvisationally, and as choreographer and dancer in the development of solo, small group and large group pieces.

**PE 490**
**Independent Study**
Open to students who have permission of the supervising instructor and the department. Course of study, meetings, and credit by arrangement.

**PE 493** **3 cr. 3 hr.**
**Topics in Physical Education**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under this title.

# Physics

Chairman: *Esmail Valanejad*

Professors: *Esmail Valanejad*, *Norman Fredette*

PH 101, 102, 103 and 104 are for non-science majors and are strongly recommended to students at large for satisfying their General Education requirements.

PH 115 physics for the life sciences is a special one-semester course for medical technology students.

PH 130, 140 are for computer science, chemistry, mathematics, industrial science majors.

PH 210, 220, 310, 320, 410, and 420 are all advanced courses that will be offered from time to time in the form of free electives to those students who have had PH 130 and 140 and have shown keen interest in Physics and Mathematics.

**PH 101, 102** **3 cr. 4 hr.**
**Physical Science I and II**
For the non-scientist. Emphasis is upon the building of conceptual models, problem solving techniques, and the processes of science.

**PH 103** **3 cr. 4 hr.**
**Astronomy**
A study of planetary motion, the sun, stars, and galaxies. An observing program. A background of algebra is assumed.

**PH 104** **3 cr. 4 hr.**
**Environmental Physical Science**
The study of (1) the environment, (2) the effects of pollution on the environment, ecosystems, and natural balance and (3) relevant background material in physical science as needed. Prerequisite: Physical Science I, Earth, Sea and Air, or equivalent.

**PH 115** **4 cr. 6 hr.**
**Physics for the Life Sciences**
An introduction to Physics which includes a brief treatment of force, work and energy and an emphasis on the nature of waves, optics and electricity.

**PH 130** **4 cr. 5 hr.**
**General Physics I**
Mechanics: Straight line motion; circular motion; Kepler's law of planetary motion; universal gravitation; work; energy; power; conservation of energy and momentum; simple harmonic motion. Hydrostatics and hydrodynamics: Archimedes' principle, Bernouli's equation, viscosity, Stokes law, Reynolds number. Heat and thermodynamics: heat and heat measurements; transfer of heat; thermal properties of matter; the laws of thermodynamics; kinetic theory of gases.

**PH 140** **4 cr. 5 hr.**
**General Physics II**
Electricity and Magnetism: Coulomb's law, electric field, electric potential, capacitance, electric circuits, magnetic field, magnetic forces on a current-carrying conductor, magnetic field of a current, induced e.m.f., magnetic properties of matter. Geometrical Optics: Laws of reflection and refraction; mirrors; lenses; optical instruments; eye and its optical defects and their correction; illumination and color. Physical Optics: interference and diffraction; polarization.
*Prerequisite: PH 130.*

**PH 210** **4 cr. 5 hr.**
**General Physics III**
Atomic and Nuclear Physics: Electronic configuration of the atoms; Bohr atom; atomic spectra; X-rays; radioactivity and radiation hazards.
*Prerequisite: PH 140.*

**PH 220** **3 cr. 3 hr.**
**Intermediate Mechanics**
Calculus and delta methods are used in an analytical study of Newtonian mechanics with application to nonconservative forces, central forces, and rotational dynamics. Linear oscillator, free and forced oscillations, damping, vibrating string, traveling and standing waves.
*Prerequisite: PH 130 or equivalent.*

**PH 270** **3 cr. 3 hr.**
**Physics for Industrial Technology**
This is a course in elementary Physics with particular emphasis on applications in the area of industrial technology. Topics include kinematics, statics, dynamics, work and energy, simple machines, fluid dynamics, and heat transfer.

**PH 310** **3 cr. 3 hr.**
**Quantum Mechanics**
Inadequacies of classical physics, uncertainty principle, Schrodinger equation, physical interpretation of wave function, energy levels, harmonic oscillator, hydrogen atom, perturbation theory.
*Prerequisites: PH 210 and MA 240.*

**PH 320** **3 cr. 3 hr.**
**Electricity and Magnetism**
After a preliminary introduction to vector algebra, electrostatic as well as magnetostatic fields in vacuum and material media are discussed. Maxwell's equations and propagation of electromagnetic waves are considered.

**PH 410** **3 cr. 3 hr.**
**Statistical Mechanics and Thermodynamics**
Laws of thermodynamics, entropy, Carnot cycle, kinetic theory of gases, Bose and Fermi gases, low temperature physics.
*Prerequisite: PH 310.*

**PH 420** **3 cr. 4 hr.**
**Solid State Physics**
Short review of quantum mechanics, crystal

structure magnetism semiconductor theory, specific heat of solids.
*Prerequisite: CS 160.*

**PH 490**
**Independent Study**
Open to students who have permission of the supervising instructor and the department. Course of study, meetings, and credit by arrangement.

**PH 493** **3 cr. 3 hr.**
**Topics in Physics**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under this title.

# Political Science

Professor: *Donald Norton*
Assoc. Professor: *Shirley Wagner*

Courses in political science are intended for any student with a general interest in politics and government. They are also designed to provide a proper background for students interested in pursuing graduate study or a career in law, public administration, or government and political science. It is recommended that these students take six hours of Modern American Government and six hours of electives.

**PS 100** **3 cr. 3 hr.**
**Modern American Government: State and Urban Government**
Focus upon current issues in urban and state government and politics and attempts to evaluate proposed solutions.

**PS 210** **3 cr. 3 hr.**
**Public Policy Analysis: Case Studies in American Politics**
Covers four major divisions of public policy: health, education, labor, and welfare. The aim is to attain an understanding of how the American political system works through a study of the policy that has come out of that system.

**PS 250** **6 cr. 12 hr.**
**Legal Internship**
Internships are available in several regional law offices for those persons interested in para-legal work. These internships prepare students for positions in law offices, public administration, and other human service work. Credit is either 6 or 12 semester hours depending upon arrangements with the Social Sciences Department.

**PS 320** **3 cr. 3 hr.**
**Contemporary International Relations**
A study of critical problems confronting the present international system. The "Cold War," armed conflict, internal violence, as well as prospects for the resolution of conflict are explored.

**PS 350** **3 cr. 3 hr.**
**Political Systems of the Modern World**
A comparative analysis of modern national governments such as the Soviet Union, France, Germany, and Great Britain. Importance of the world's political heritage and the implications for the emerging nations of liberal democracy, communism, and dictatorship.

**PS 360** **3 cr. 3 hr.**
**Civil Rights and Civil Liberties in the United States**
Conceptual perspectives of civil rights and civil liberties, freedom of expression and the problem of loyalty and security, equality, the civil rights movement, criminal justice procedures, and the politics of civil rights and liberties.

**PS 370** **3 cr. 3 hr.**
**Introduction to the Legal Process**
An introduction to the American legal system: how courts and lawyers function, how cases are decided, and the means by which courts interpret legislation. Open to any student, but recommended for those interested in the legal internship program.

**PS 494**
**Internships in Political Science**
Off-campus opportunities, carrying appropriate academic credit, are available in local, state, and federal government offices and with political campaigns. Open to students who have the permission of the department. Credit and hours by special arrangement.

**PS 490** **3 cr.**
**Independent Study in Political Science**
Open to students who have the permission of the supervising instructor and the department. Course of study, meetings, and credit by arrangement.

**PS 493** **3 cr. 3 hr.**
**Topics in Political Science**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under this title.

# Psychology

Coordinator:
*Mary Ann Hanley*

Professors:
*Alan Bernstein*
*John Dufault*
*E. Arthur Garvin*
*Paul Girling*
*Anita Hotchkiss*
*Donald Isaac*
*David Maloney*
*Mabel Sgan*
*Richard Spencer*

Assoc. Professors:
*G. Jefferson Breen*
*Carol Gay*
*John Solin*

Asst. Professors:
*Peter Hogan*
*Allan Kimmel*
*Richard Kruse*
*Donna Lee McCabe*
*Beverly Roder*

The Psychology program is a component of the Behavioral Sciences Department. It serves majors and minors in the discipline as well as offering supportive courses for a variety of other programs in the college.

## *Aims and Objectives*

The goal of the psychology program is to educate students in the scientific study of human behavior. The program combines theoretical, methodological and applied topics. This enables student to acquire knowledge and skills that will enrich their personal lives and work careers.

## *The Psychology Major*

The degrees of Bachelor of Arts and Bachelor of Science in Psychology require a minimum of thirty-seven semester hours of course work in Psychology, beyond the course in General Psychology.

Note: The Bachelor of Arts degree requires foreign language proficiency at the second year college level.

The program is divided into two groups of courses with special requirements, plus a selection of integrative or pre-professional courses.

Note: Liability insurance is required of all student enrolled in field -based courses, or other courses where deemed necessary.

## *Requirements for the Psychology Major:*

### *Group I:*

All courses required
PY 110 General Psychology (not counted toward major)
PY 211 Intro. to Research Methods
PY 212 Psychological Statistics
PY 341 Experimental Psychology
PY 348 History and Systems in Psychology

### *Group II:*

At least one course required from each area.
*Area 1: Developmental*
PY 221 Child Psychology
PY 223 Adolescent Psychology
PY 224 Adult Development
PY 225 Psychology of Women
PY 226 Gerontology
PY 228 Psychology of Human Sexuality
PY 232 Death and Dying

*Area 2: Adaptive*
PY 216 The Psychology of Speech and

PY 230 Psychology of Personality
PY 240 Psychology of Captivity
PY 265 Social Psychology
PY 235 Abnormal Psychology
PY 255 Group Dynamics
PY 262 Work and the Individual
PY 257 Small Group Leadership

*Area 3: Basic Processes*
PY 342 Physiological Psychology
PY 343 Perception
PY 350 Psychology of Learning
PY 353 Motivation

*Area 4: Applied Studies*
PY 215 Introduction to Speech Pathology
PY 245 Psychological Testing
PY 261 Organizational Psychology
PY 263 Industrial Psychology: Human Factors
PY 264 Performance Evaluation and Development
PY 271 Learning Theory and Its Application
PY 277 Principles of Guidance

The remainder of the thirty-seven credits should be taken among the above areas or from the following integrative or pre-professional courses. An integrative or pre-professional course is recommended.

## *Integrative or Pre-Professional Courses*

PY 322
Advanced Child Psychology
PY 480
General Psychology Teaching Practicum
PY 481, PY 482
Practicum in Psychology
PY 490
Independent Study
PY 493
Topics in Psychology
PY 494, 495, 496 Internship in Psychology

*Concentrations/Specializations/Electives*
Students may concentrate or specialize in certain areas, such as Developmental Psychology, Industrial-Organizational Psychology, Social Psychology, etc. Course options should be selected in consultation with the student's advisor. See "A Note on Service Courses" and "Planning Course Work" in the Psychology Student Handbook for guidelines.

*Concentration in Industrial and Organizational Psychology*
Designed to prepare students entering a wide range of occupations in business and industry. It is particularly appropriate for those intending careers in personnel or human resource functions. The concentration is available to any student majoring or minoring in psychology.

The Concentration requires students to take 12 semester hours of course work from the courses listed below, and others when they are approved.

PY 261 Organizational Psychology
PY 262 Work and the Individual
PY 263 Industrial Psychology: Human 261 Factors
PY 264 Performance Evaluation and Development
PY 265 Personnel Psychology
PY 493 Topics in Psychology (where applicable)

Internships in Industrial and Organizational settings are available and strongly recommended for students taking this concentration.

*Concentration in Developmental Psychology*
This concentration is appropriate for students who plan to undertake advanced work in developmental psychology, or who seek future employment in related fields.

Students take at least 12 s.h. of coursework from two groups of courses. Courses in Group 1 provide an introduction to various topics in developmental psychology. Courses in Group 2 provide opportunities for in-depth exploration of issues through basic research and special projects.

## *The Minor in Psychology*

### *Group I:*

Three of the following are required: PY 221, PY 223, PY 224, PY 225, PY 226, PY 493 Topics in Psychology (where applicable)

### *Group II:*

One of the following is required: PY 322, PY 482, PY 495, PY 490

The minor in Psychology requires a minimum of 18 semester hours of course work in the area, beyond the course General Psychology.

The Psychology minor is designed to enable the student (a) to understand and evaluate psychological research and literature; (b) to choose courses which complement and relate to the major field of study; and (c) to explore a particular interest in psychology in some depth. Accordingly, the following course organization is required:

Group I All courses required PY 110 General Psychology (prerequisite; not counted towards minor) PY 211 Introduction to Research Methods.

Group II At least one course is to be taken from EACH of any THREE of the four areas described under the major (Adaptive, Applied Studies, Basic Processes, and Developmental). The remaining required course may be selected from either the integrative courses or any one of the above mentioned areas.

*Asterisk indicates that the course is offered infrequently.

**PY 110** **3 cr. 3 hr.**
**General Psychology**
Introduces the student to the contemporary discipline of the science of human behavior and mental processes. Topics for investigation include the scientific method, biological bases of behavior, maturation, motivation, emotions, learning, personality and adjustment. The course is prerequisite for all other courses in Psychology.

**PY 211** **3 cr. 3 hr.**
**Introduction to Research Methods**
The emphasis in this course is on research design, including consideration of sampling procedures, questionnaire design, methods of observation and reporting.
*Prerequisite: PY 110*

**PY 212** **3 cr. 3 hr.**
**Psychological Statistics**
This is an introduction to applied statistics, descriptive statistics, and basic inferential statistics up to and including analysis of variance.
*Prerequisite: PY 110, PY 211 and MA 110*

***PY 215** **3 cr. 3 hr.**
**Introduction to Speech Pathology**
This course provides an orientation to speech pathology by identification and referral procedures for primary speech problems, examination and observation of speech therapy procedures. Clinical point of view is stressed.
*Prerequisite: PY 110.*

**PY 216** **3 cr. 3 hr.**
**The Psychology of Speech and Communication**
This course provides information for judging speech behaviors of self and others. Concepts of speech, language and communication, healthy speaking and listening behaviors, non-verbal communication, animal communication, linguistic and psycholinguistic theory.
*Prerequisite: PY 110.*

**PY 220** **3 cr. 3 hr.**
**Human Growth and Development**
This life-span course emphasizes a study of the physical, physiological, social, and psychological development of the individual from conception to old age.
*Prerequisite: PY 110. (Cannot be used as credit toward the major.)*

**PY 221** **3 cr. 3 hr.**
**Child Psychology**
This course offers an introductory overview of the developing child from conception trhough preadolescence. Theories and research are used to lay the foundation for the study of the physical, cognitive, social and emotional development of the child. Also considered are such topics as attachment, moral development, language acquisition, and genetic and environmental influences on development.
*Prerequisite: PY 110.*

**PY 223** **3 cr. 3 hr.**
**Adolescent Psychology**
Adolescence as a stage of development and as a cultural phenomenon is investigated. The influence of physical, cognitive and psychosocial factors on the adolescent's search for identity is examined. Emphasis is on an interdisciplinary approach that draws on relevant theories and research from a wide range of fields.
*Prerequisite: PY 110.*

**PY 224** **3 cr. 3 hr.**
**Adult Development**
This course introduces the student to theories and research for the periods of young and middleadulthood. Physical, mental and personality processes are covered, as well as issues and problems of research in adult development. Application of this knowledge to adults in their relationships and in their work settings are stressed.
*Prerequisite: PY 110.*

**PY 225** **3 cr. 3 hr.**
**Psychology of Women**
Objectives of this course include an increased awareness of the psychological development of women and of the dimensions of self and personhood in relation to society; the examination and analysis of issues relative to current debate concerning the status of women.
*Prerequisite: PY 110.*

**PY 226** **3 cr. 3 hr.**
**Gerontology: The Psychology of Growing Old**
This course introduces the student to key issues and problems of aging persons as they approach thier final phase of development. A guiding theme is the potential for living full lives in old age. Topics for investigation include intelligence and memory, personality differences, altered life styles reactions to stress and loss including the personal loss of death. Focus is on integrating theory, current research and personal experience. Emphasis is on the normal aging process.
*Prerequisite: PY 110.*

**PY 228** **3 cr. 3 hr.**
**Psychology of Human Sexuality**
This course includes a study of the relationships among the various aspects of sexuality, including relationships, social norms, and cross-cultural variations in sexual behavior.
*Prerequisite: PY 110.*

**PY 230** **3 cr. 3 hr.**
**Psychology of Personality**
Dynamic factors in personality formation are studied through some of the leading theoretical positions on personality development.
*Prerequisite: PY 110.*

**PY 232** **3 cr. 3 hr.**
**Psychology of Death and Dying**
Through lectures, readings, discussions, and media, students explore psychological theory, research, and personal feelings concerning the dying process, suicide, grief, sudden death, and dying as it influences persons at different developmental stages.
*Prerequisite: PY 110.*

**PY 240** **3 cr. 3 hr.**
**Psychology of Captivity**
This course deals with the effects of captivity on both the captive and the captor. Materials include films, tapes, interviews, first-person accounts, systematic studies of experiences, and the long-term consequences on persons involved and on their children.
*Prerequisite: PY 110.*

**PY 250** **3 cr. 3 hr.**
**Social Psychology**
This course provides an introduction to the study of human social behavior. Representative topics include attitudes and their formation, aggression, prosocial behavior, conformity, and interpersonal attraction, as well as group dynamics, structure, and leadership. The application of social-psychological research to contemporary social problems also will be considered.
*Prerequisite: PY 110.*

**PY 275** **3 cr. 3 hr.**
**Tests and Measurements**
This is a study of the basic statistical concepts and techniques of measurement, with application to teacher-made tests and standardized tests used in education and psychology.
*Prerequisite: PY 110.*

**PY 235** **3 cr. 3 hr.**
**Abnormal Psychology**
Normal, neurotic, and psychotic behavior and methods of psychotherapy are reviewed. Emphasized are techniques for maintaining optimal psychological health.
*Prerequisite: PY 110.*

**PY 342** **3 cr. 3 hr.**
**Physiological Psychology**
This course examines the relationship between brain, mind and behavior. Topics include learning, motivation, emotion, motor activity, perception, and mental illnesses.
*Prerequisite: PY 110.*

**PY 343** **3 cr. 3 hr.**
**Perception**
Principles related to a person's awareness of his world are studied. Topics to be considered are psychophysics, the relationship between motivation and perception, the sensory bases of perception and localization in space.
*Prerequisite: PY 110.*

**PY 245** **3 cr. 3 hr.**
**Psychological Testing**
This course is designed to give students a broad understanding of the theory and use of psychological testing. Methods of test evaluation, analysis, and interpretation are presented. Standardized testing instruments used to measure human cognitive and affective factors are explored and their purposes reviewed.
*Prerequisite: PY 110.*

**PY 350** **3 cr. 3 hr.**
**Psychology of Learning**
This course focuses on principles and theories of learning, classical conditioning, operant conditioning, verbal learning, acquisition of motor skills.
*Prerequisite: PY 110.*

**PY 353** **3 cr. 3 hr.**
**Motivation**
Characteristics of motivated behavior, explanation of sources of motives, and application of theories to current research and interpersonal skills are studied in this course. Emphasis is on the biological, learned, and cognitive components of motivation. Topics include internal and external motives, the relationship of stress and motivation, the place of physiological processes in motivation, issues in motivation of others, motivation for aggressive/passive behaviors, and success/failure motivation.
*Prerequisites: PY 110.*

**PY 255** **3 cr. 3 hr.**
**Group Dynamics**
The nature and dynamics of interpersonal relationships are revealed in typical group settings such as classrooms, workshop seminars, and other discussion-oriented groups. Emphasis is on both content and process as demonstrated in a laboratory learning environment.
*Prerequisite: PY 110.*

**PY 257** **3 cr. 3 hr.**
**Small Group Leadership**
This course is designed to equip students to plan and conduct meetings requiring the coordination of effort of small groups of people. Participants will study and practice basic leadership skills applicable to a variety of small group settings. They will develop and demonstrate these skills in the context of small group participation in class and as leaders of extra-class groups.
*Prerequisite: PY 110.*

**PY 261** **3 cr. 3 hr.**
**Organizational Psychology**
This course examines organizational influences on motivation and satisfaction of the workforce. Methods of surveying organizational climate are introduced, and a variety of intervention methods are evaluated. Organizational experience in Japan, Western Europe and the United States will be analyzed and compared.
*Prerequisite: PY 110.*

**PY 262** **3 cr. 3 hr.**
**Work and the Individual**
This course considers the ways in which individuals meet their needs for growth and the development while the organization meets its needs for worker productivity. How the organization's needs affect workers and how workers react to these pressures are subjects studied. Topics include work as a basic human need, relationships with co-workers, interpersonal skills, uses of power influence, leading and motivating others meeting personal needs/job satisfaction, adaptation to change, problems in adaptation (alchohol, drugs, interpersonal, lack of competence, etc.), stress management, career development.
*Prerequisite: PY 110.*

**PY 263** **3 cr. 3 hr.**
**Industrial Psychology: Human Factors**
Students develop the ability to fit the demands of people and work together. They study the "human factors" which affect design considerations. Competence is developed in tailoring work conditions and equipment to facilitate human performance and in identifying the skills required by the job.
*Prerequisite: PY 110.*

**PY 264** **3 cr. 3 hr.**
**Performance Appraisal and Development**
The definition, measurement, and development of performance in complex work roles are analyzed. An essential ingredient of the course are participative workshops aimed at developing the skills of behavior observation, performance coaching, and training.
*Prerequisite: PY 110.*

**PY 265** **3 cr. 3 hr.**
**Personnel Psychology**
This course will provide a treatment of the major issues in personnel psychology and will emphasize the psychological aspects of personnel systems. The focus of the course will be on the psychological assessment of potential and current employees as a means for "fitting" workers into jobs; the employment discrimination issues that may emerge in the work setting; and the use and interpretation of descriptive and inferential statistics in personnel decision making.
*Prerequisite: PY 110.*

**PY 271** **3 cr. 3 hr.**
**Learning Theory and Its Applications**
This course focuses on the principles and theories of learning, as derived by both the laboratory psychologist and the educational researcher, as applied to various social settings: the classroom, the family, etc.
*Prerequisite: PY 110.*

***PY 273** **3 cr. 3 hr.**
**Psycho-Social Problems of Urban Children**
The experience of the inner-city child is studied in relation to housing, schools, and teachers; emergence of the "alternative school" and other attempts to help children. Students participate in a two-hour weekly seminar and work for at least five hours in the community.
*Prerequisite: PY 110.*

**PY 277** **3 cr. 3 hr.**
**Principles of Guidance**
This is an introductory course for students interested in developing their skills in helping relationships in a one-to-one relationship and or in a group setting.
*Prerequisite: PY 110.*

**PY 322** **3 cr. 3 hr.**
**Advanced Child Psychology**
Explores in greater depth principles and theories learned in PY 211. Acquaints the student with methodology used in contemporary research in Child Psychology. Through assigned exercises and individual projects, students will focus on selected issues in child development. Students will work directly with children in applying the principles and techniques learned in the course.
*Prerequisites: PY 221;*
*Strongly recommended: PY 212.*

**PY 341** **4 cr. 4 hr.**
**Experimental Psychology**
This course is an analysis and study of the scientific method, experimental designs, and laboratory methods in behavioral science, emphasizing laboratory experiments and scientific communication of results. Students design, analyze and report on their own research. Computer data analysis is also covered.
*Prerequisite: PY 211, 212, and MA 110; junior or senior standing in the major, permission of Instructor.*

**PY 348** **3 cr. 3 hr.**
**History and Systems of Psychology**
This advanced course provides a consideration of contemporary psychology as seen in its historical perspective. The development of psychological concepts and theories is traced from their antecedents in philosophy, and the physical sciences.
*Prerequisite: Junior or Senior standing, 15 credits in psychology.*

**PY 480** **6 cr. 15 hr.**
**General Psychology Teaching Practicum**
Assistantship in the teaching of General Psychology. By appointment by staff only.

**PY 490** **1-6 cr. 3-15 hr.**
**Independent Study**
This experience is offered primarily to psychology students of Junior or Senior standing, and requires approval of the professor and of the Psychology Curriculum Committee. The student must petition the Psychology Curriculum Committee the semester prior to undertaking the independent study. Independent study may take the form of: special advanced reading programs; problem identification and research; assistantships; acquisition of professional skills. Under no circumstances will independent study be substituted for regularly scheduled courses. Independent study may be taken for from 1 to 6 semester hours.
*Prerequisite: 3.0 cumulative average in the major.*

**PY 493** **3 cr. 3 hr.**
**Topics in Psychology**
Courses offered on an occasional, experimental basis, for supplementation and enrichment of program. More than one such course may be taken with permission.

**PY 494** **6 cr. 15 hr.**
**PY 495** **12 cr. 30 hr.**
**Internship in Psychology**
Through an internship the student experiences the relationship between courses in psychology and their applications in the field. Work is carried on in settings approved by the department, and faculty member and an on-site supervisor. Internships are available in service agencies, business, and industry. Each intership would presuppose specific course background. Students are encouraged to discuss internship plans with their advisors early in their college experience. Interested students must contact the Psychology Curriculum Coordinator early in the fall semester of the year in which the internship is desired. Internships are offered only in the spring semester. Liability insurance is required of all students enrolled in this course.
*Prerequisite: 2.5 cumulative average overall and in the major; departmental approval.*

**PY 496** **12 cr. 36 hr.**
**Internship in Psychology**
*Same description and prerequisites as for PY 494 and 495.*

# Russian

Chairman: *Richard DeCesare*
Professor: *John Burke*

**RU 100** **3 cr. 4 hr.**
**Russian for Beginners I**
Correct pronunciation, reading ability, and fundamentals of grammar and syntax. Russian gradually becomes the working classroom and laboratory language.

**RU 110** **3 cr. 3 hr.**
**Russian for Beginners II**

**RU 200** **3 cr. 3 hr.**
**Intermediate Russian I**
Remedial pronunciation, grammar review, conversation, and laboratory practice. Readings stress U.S.S.R. life, customs, and culture. Russian is the working language.
*Prerequisite: Two years of high school Russian or RU 110 and/or Instructor's permission.*

**RU 210** **3 cr. 3 hr.**
**Intermediate Russian II**
Continuation of RU 200.

**RU 340** **3 cr. 3 hr.**
**Dostoevsky and Tolstoy (In English)**
An in depth comparative study of the two giants of Russian XIX century literature. Contrasts in biography themes and styles. Lectures and readings in English. Standard length paper. Midterm and final examinations.

**RU 360** **3 cr. 3 hr.**
**Russian Literature in English Translation**
A seminar on a specific topic from Russian literature (eg. Soviet Literature, the modern Russian novel). Lectures and readings in English. Emphasis on significant works in Russian and Soviet literature. Midterm and final examinations and a standard length paper. May be repeated for credit.

**RU 370** **3 cr. 3 hr.**
**Russian Culture and Soviet Life (In English)**
An introduction to Russian life and culture as manifested in Russian geography, art, music, film and literature. National characteristics of the Russian people and their influence on Soviet institutions. Everyday life in the Soviet Union. Includes a significant audio-visual component.

**RU 490**
**Independent Study in Russian**
Open to students in the language with the permission of the supervising instructor and the Department Chairman. Meeting times and credit by arrangement.

**RU 493** **3 cr. 3 hr.**
**Topics in Russian**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under this title.

# Sociology

Coordinator: *Augustine Ayree*
Professors: *Harold Melvin*
Assoc. Professor: *Patricia Hayes*
Asst. Professors: *Augustine Aryee*, *Margot Kempers*

Through studying sociology students are invited to explore the social world; a world of which they are an integral part. In pursuing this study students develop a keener understanding of the forces which impact society, and which thus affect each one of us. The end result, hopefully, is individuals who can successfully cope with societal demands and who can have a positive impact on that society.

Sociology is one of the disciplines which make up the Behavioral Sciences Department. Students can pursue a major in Sociology (B.A. or B.S. degree) or a minor. Sociology courses are also a component of the Human Services major.

## *The Major in Sociology:*

The major requires 36 semester hours of course work in Sociology approved by the faculty. This total includes a core of 12 semester hours. The remaining 24 semester hours must be selected from advanced courses of which at least 18 semester hours must be in Sociology and 6 semester hours may be in Psychology and/or Human Services. In completing the major each student is expected to work with a faculty advisor to design a program of studies that will meet his or her individual educational objectives and career goals. The student also has the option of selecting an area of specialization in Sociology. Each area would consist of sociology courses along with suportive courses courses from elsewhere in the college curriculum.

## *Core Courses*

Introduction to Sociology (SO 110), Basic Skills of Social Research (SO 213), Social Theory (SO 216), and Cultural Anthropology (SO 225).

## *Areas of Specialization*

**Legal System and Criminal Justice**
This area provides preparation for students interested in law school, or planning careers in areas such as law enforcement, corrections, probation, para-legal services, and consumer protection. Students interested in working with youths and/or adults in community-based agencies such as half-way houses, shelters for battered women, and neighborhood centers could also benefit by following this area.

**Urban Sociology**
Recommended for those who desire to work in urban social agencies, city planning departments, personnel offices, neighborhood centers and community development projects. This area may also provide a useful background for those planning graduate study in urban affairs, law, social work, urban planning and business.

**Race and Ethnic Relations**
Very desirable for persons planning to work or live in a multiracial environment. It provides a foundation for careers in metropolitan agencies, business setting, governmental institutions, race relations programs, and employment centers.

**Sociology of the Family**
Helps prepare students for employment in such family-related agencies as crisis intervention centers, welfare departments, and homes for battered women. It provides a background for students who wish to enter the field of social work or who wish to continue their education in social welfare at the graduate level.

**Medical Sociology**
Benefitial for students planning careers associated with health care. Examples include working with drug addicts and alcoholics, and work in health agencies such as nursing homes, drug rehabilitation centers, hospices, and homes for the elderly.

**Sociology of Religion**
Designed for students planning employment in religious institutions, either in headquarters or in local groups. Such occupations include the clergy, religious counselors, and religious educators. It is also designed for those who seek greater understanding of religious beliefs, practices, and organizations.

## *The Minor In Sociology*

The minor in Sociology consists of 18 semester hours in Sociology. There is a core of nine semester hours including Introductory Sociology (SO 110), Basic Skills in Social Research (SO 213), and Social Theory (SO 216). The remaining nine semester hours may be selected according to student needs and interests.

**SO 110** **3 cr. 3 hr.**
**Introduction to Sociology**
Encourages the student to critically analyze the social world which he or she inhabits. Some of the major theoretical orientations are reviewed, as well as the major concepts of the discipline. Institutions of society such as family, education and medicine are examined and different research techniques used by sociologists are discussed briefly. Prerequisite for all other Sociology courses.

**SO 213** **3 cr. 3 hr.**
**Basic Skills of Social Research**
The purpose is to develp knowledge of research concepts and skill in employing such techniques as interviewing, observation, questionnaire construction, etc. The contribution of such methods to sociological study and practice is considered.

**SO 214** **3 cr. 3 hr.**
**Application of Social Research in the Work Setting**
Providers a deeper understanding of techniques of social research than SO 213. The application of such techniques to consumer behavior, business and government organizations, and social agencies, is examined.

**SO 216** **3 cr. 3 hr.**
**Social Theory**
Social philosophy precursors, sociological scientific theorists from Comte to Parsons, and contemporary schools of thought in Sociology are studied.

**SO 225** **3 cr. 3 hr.**
**Cultural Anthropology**
Introduces students to varying cultures. Attention is given to hunting and gathering, pastoral, horticultural, agricultural, and industrial societies. Cultural change imposed by industrialization and technological revolution in both primitive and modern societies is also analyzed. The intent is to make student knowledgeable about the development and variability of cultures, living styles, and values, and to ignite students' imaginations to tackle elusive questions of the capabilities, limits, and future of human societies.

***SO 235** **3 cr. 3 hr.**
**Sociology of Language**
The effect of culture on language is studied. Also considered are such variables as age, sex, class, racial and ethnic background on the ways people speak and write.

**SO 244** **3 cr. 3 hr.**
**Urban Sociology**
This course provides a survey of the origins and development of cities, the anatomy of modern American cities, world urbanization, urban planning, and social change. The focus is primarily on American urban life, past and present.

**SO 245** **3 cr. 3 hr.**
**Community Analysis**
This course examines the community as a social system. The course includes field study involving observation and analysis of local communities.

**SO 250** **3 cr. 3 hr.**
**Race and Ethnic Relations**
This course explores the origin and nature of racial and ethnic difference and examines how such difference directly and indirectly affects the lives of American people. The

focus is on patterns of racial and ethnic oppression and responses to such oppression. Consideration is given to the political, economic, legal, and socio-cultural experiences of several minority groups in American society.

***SO 251** **3 cr. 3 hr.**
**Future Studies: Sociological Perspectives**
Students examine various sociological techniques for projecting the future of societies, and develop an awareness of technological, demographic, environmental, and other significant variables that influence change in human societies.

**SO 362** **3 cr. 3 hr.**
**Sociology of Religion**
Emphasizes the structure and function of religious organizations, beliefs, and practices. Current issues in American religion are also.

**SO 363** **3 cr. 3 hr.**
**Sociology of The Family**
The structure and function of the family is analyzed. Current trends along with practical solutions to problems of family living are discussed.

**SO 365** **3 cr. 3 hr.**
**Sociology of Organizations**
Introduces the study of work organizations as social systems. The impact of technological change, and the effects of structure factors on organizations are considered. Approaches to organization diagnosis and development are discussed.

**SO 375** **3 cr. 3 hr.**
**Social Problems**
Consideration is given to major social areas such as poverty, crime, health care, family, government etc. Etiology, analysis, and prognosis are studied.

**SO 376** **3 cr. 3 hr.**
**Juvenile Delinquency**
This course examines major sociological theories of delinquency including an analysis of empirical studies. Attention will also be given to the juvenile judicial system and proposed treatment programs.

**SO 490** **3 cr.**
**Independent Study**
A program of study designed with the student to make possible in-depth learning in a specific topic for which no regular course is available. For Sociology majors only. May be taken no more than two times with permission of Faculty.

**SO 493** **3 cr. 3 hr.**
**Topics in Sociology**
Courses offered on an occasional, experimental basis for supplementation and enrichment of program. With permission more than one such course may be taken.

**SO 496** **6 cr. 15 hr.**
**Internship in Sociology**
Arranged in consultation with Faculty and carried out under auspices of an approved agency or program in the community, or a state or federal agency or office. This experience should be of such a nature as to develop skills in sociological practice, principles, and/or research. Liability insurance is required of all students enrolled in this course.
*Prerequisite: Junior or Senior Standing and GPA of 2.5 in the major.*

**SO 497** **12 cr. 30 hr.**
**Internship in Sociology**
See SO 496 for description and prerequisites.

# Spanish

Chairman:
*Richard DeCesare*

Asst. Professors:
*Maria DeVelasco*
*Jeannette Scharf*

## *The Minor in Spanish*

The minor in Spanish will require a minimum of 15 semester hours. Students must take Intermediate Spanish I and II or be able to demonstrate proficiency at that level. Elementary Spanish will not count toward the minor. After demonstrating intermediate level competency, the student may take a combination of courses in Spanish literature, composition or culture which will yield the requisite 15 hours of credit. For those students starting Spanish above the intermediate level, SP 490 Independent Study in Spanish, may be repeated for credit.

**SP 100** **3 cr. 3 hr.**
**Spanish for Beginners I**
Correct pronunciation, reading ability and fundamentals of grammar and syntax. The premise is to teach the student the four language skills of listening, speaking, reading and writing. Cultural topics are integrated with these skills. Spanish gradually becomes the working classroom language. Sudents with a year or more of high school Spanish should register for Spanish 200.

**SP 110** **3 cr. 3 hr.**
**Spanish for Beginners II**
Continuation of SP 100 or permission of the instructor.

**SP 200** **3 cr. 3 hr.**
**Intermediate Spanish I**
A discussion of advanced grammar points and readings dealing with Spanish life. Emphasis will be on developing conversational fluency.
*Prerequisite: SP 100 or permission of the instructor.*

**SP 210** **3 cr. 3 hr.**
**Intermediate Spanish II**
Continuation of SP 200 or permission of the instructor.

**SP 300** **3 cr. 3 hr.**
**Hispanic Culture**
This course is designed to provide students with a knowledge and understanding of the Hispanic world through a study of the historical and cultural development of different countries with emphasis on contemporary problems and social customs of the Hispanic in the USA.
*Prerequisite: SP 210 or permission of the Instructor.*

**SP 330** **3 cr. 3 hr.**
**Hispanic Literature**
Selected works reflecting the Hispanic heritage in contemporary Spanish and Latin American literature.
*Prerequisite: SP 210 or permission of the Instructor.*

**SP 350** **3 cr. 3 hr.**
**Spanish Conversation and Composition**
This course is designed to teach skills that will increase the student's overall ability to read, speak and write the language. Students will be expected to write compositions on topics developed in class.
*Prerequisite: SP 210 or permission of the Instructor.*

**SP 400** **3 cr. 3 hr.**
**Practical Spanish for the Public Services Professional I**
Spanish for people in public services, human services, nursing, medical technology, special education, with special emphasis upon the cultural and psychological characteristics of Spanish speaking peoples.

**SP 410** **3 cr. 3 hr.**
**Practical Spanish for the Public Services Professional II**
*Continuation of SP 400 or Instructor's permission.*

***SP 488** **3 cr. 3 hr.**
**Methods for Teaching Spanish in the Elementary School**
Techniques and materials for use in elementary school.
*Prerequisite: Minimum of 12 semester hours beyond beginner's level and permission of Instructor.*

**SP 490**
**Independent Study in Spanish**
Open to students in the language with the permission of the supervising Instructor and the Department Chairman. Meeting times and credit by arrangement.

**SP 493** **3 cr. 3 hr.**
**Topics in Spanish**
Courses having a more narrow focus or those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under this title.

# Special Education

Chairman:
*Anne May*

Professors:
*Katherine Flynn*
*Rosemarie Giovino*
*Sandra Miller-Jacobs*
*Anne May*
*Michele Zide*

Assoc. Professors:
*Elaine Francis*
*Lawrence Gomes*
*Hattie Moreland*
*Donald Rapp*

Asst. Professors:
*Carla Borg*

The Special Education Department at Fitchburg State College is the oldest and most comprehensive state program in the Commonwealth of Massachusetts. In this program, emphasis is given to content, application and the ability to use strategies and resources in working with children and adults who have special needs.

Fitchburg State College provides four major options within the Special Education curriculum. Programs for Teacher of Children with Moderate Special Needs (N-9) and (5-12)/Elementary (1-6), Teacher of Young Children with Special Needs (ages 3-7), Teacher of Children with Severe Special Needs (N-12), and Teacher of Special Needs: Vision/Elementary (1-6) are offered.

All special education candidates must satisfy the Constitution requirement of the

Commonwealth of Massachusetts. See, "Common Graduation Requirements..."

The following are internships/practica unique to the Department of Special Education:

**Integrated Program for Severely Multiply Handicapped**
This course will cover assessment, program development and implementation of program in the major curriculum areas (communication, language, motor, socialization, prevocation, A.D.L., sensorimotor, cognition, community living skills) for individuals with severe special needs. These topics will be covered in seminars during the first week of classes, and in bi-weekly seminars for the remainder of the semester, students participate in a morning practicum daily for 10 weeks and an all-day practicum for the remainder of the semester.
*Prerequisites: SE 210, 340, 410 PY 110, 220. Spring Semester.*

**Integrated Professional Program for Moderate Special Needs and Vision**
The Integrated Professional Program in the Department of Special Education is a program that moves the preparation of special educators from a college-based program to elementary schools in the community. In this setting, students have theoretical, observational, and participatory experiences. When a concept or technique is introduced academically, the students have the opportunity to observe a demonstration in the classroom and to engage in a teaching practice.

The College faculty provide guidance, immediate feedback and further demonstrations. The cooperating practitioner also participates in this experience with the student. The students raise questions based on their academic and participatory experiences and share ideas, problems and learning with other professionals.

This program prepares teachers to meet the educational needs of students who manifest learning behavior problems in the regular elementary classroom environment.
*Content includes:*
Reading/Language Arts/Learning Problems
Curriculum and Methodology
(a) Math
(b) Science
(c) Social Studies

**Behavior Management**
The college student spends three weeks, 6 hours a day, in an orientation program on campus for course content, and 6 weeks, 3-4 hours per day on site at an elementary school for prepracticum experiences.
*Prerequisites: PY 110, 221, 275, 371; SE 210, 220, 252; MA 283; ED 350 and the consent of the faculty of the department.*

*Eligibility* Students must have a 2.5 cumulative average in Special Education and prerequisite courses.

**Practicum Level I**
The College student spends 6 weeks at the same elementary school as above in an elementary teaching experience on a full-day basis. SE 365 and SE 366 are taken during the same semester.

**Practicum I/II-Teacher of Children with Severe Special Needs**
Students will participate in an sixteen-week full day practicum in a classroom for individuals with severe special needs. Responsibilities include assessment, program development, writing and implementation of instructional programs, data collection as well as staff training and self evaluation.
*Prerequisite: Integrated Program for Severely and Multiply Handicapped. Fall semester.*

**Practicum Level II for Moderate Special Needs and Vision**
One of the significant aspects of the curriculum is the practicum. All students are assigned to an elementary classroom for eight weeks. The cooperating practitioners selected for this program have been carefully screened in respect to certification requirements, their ability as teachers, and their identification with the program. Each student assumes complete classroom responsibility guided by the cooperating practitioner and the college supervisor. Students receive certification as elementary teachers (1-6).

**Practicum Level III for Moderate Special Needs and Vision**
All students are assigned to a resource room for eight weeks. The cooperating practitioners selected for this program have been carefully screened in respect to certification requirements, their ability as teachers, and their identification with the program. Each student assumes complete responsibility guided by the cooperating practitioner and the college supervisor. Students receive certification as Teachers of Children with Moderate Special Needs (N-9)

(5-12). Students seeking certification (5-12) must be assigned to a secondary level resource room and must have completed SE 380 and PY 223 prior to Practicum Level III.

**Practicum (YCSN)**
Practicum consists of at least one hundred and eighty (180) clock hours of supervised teaching experience which is primarily with young children (ages 3-7) identified as being in need of special education services. Under the supervision of college faculty and cooperating practitioners students will become increasingly involved in the total classroom program. During the final weeks of the practicum they will assume full responsibilty as head teacher for the operation of the classroom to which they are assigned. Students receive certification as Teacher of Young Children with Special Needs (3-7).

**SE 200** **3 cr. 3 hr.**
**Nature and Needs of the Young Child with Special Needs**
Basic handicapping conditions as they affect children from birth to seven years will be reviewed with a focus on educational programming.
*Prerequisite: Young Children With Special Needs Track, and others by consent of Instructor.*

**SE 210** **3 cr. 3 hr.**
**Introduction to Individuals with Special Needs**
Introductory course in Special Education focusing on the characteristics and needs of exceptional children and adults; the total special education delivery system; controversies and issues in the field; relevant state and federal legislation and court cases.

**SE 220** **3 cr. 3 hr.**
**Individuals with Moderate Special Needs**
Focuses specifically on the areas of mental retardation, emotional disturbances and learning disabilities. A 30-hour practicum is required.
*Prerequisite: SE 210.*

**SE 230**
**Alternative Programs in Special Education**
Designed to prepare students with the skill necessary to function in alternative programs for persons with special needs, from birth to adulthood.

*Prerequisite: Integrated Program (SE 365, 366).*

**SE 240** **3 cr. 3 hr.**
**Seminar in Special Education: Microcomputers**
Provides students with the knowledge and experience necessary to use microcomputers with individuals with special needs.
*Prerequisite: SE 365, SE 364 or permission of instructor.*

***SE 250** **3 cr. 3 hr.**
**Drugs and Schooling**
A study of the history of drug use and abuse among school age children and adults.

**SE 251** **3 cr. 3 hr.**
**Identification and Diagnosis of Young Children with Learning Problems**
Students will:
analyze the learning process in terms of physiological, neurological, social and language development and deviations. Administer evaluative measures, plan instruction, write IEP. Weekly practicum required.

**SE 252** **3 cr. 3 hr.**
**Teaching Children with Moderate Special Needs**
Covers the basic concepts and issues in assessing handicapped children and in analyzing what to teach.
*Prerequisites: SE 210, 220.*

**SE 260** **3 cr. 3 hr.**
**Affective Developmental Strategies**
Students study the affective domain variables as they relate to developmental stages of psychological growth, moral development, achievement motivation, and value clarification.

**SE 300** **3 cr. 3 hr.**
**Habilitation and Rehabilitation of the Special Child**
An analysis of the adaptive problems of the handicapped as they affect and effect society.
*Prerequisite: Integrated Program (SE 365, 366). Fall semester.*

**SE 310** **3 cr. 3 hr.**
**Early Learning Experiences for Exceptional Children**
Emphasizes a developmental approach to working with young children with special needs. (Practicum is required).

**SE 330** **3 cr. 3 hr.**
**Current Issues in Special Education**
Designed to assist students in Special Education to gain a broad perspective on the aspects of controversy and change which are influencing the profession.
*Prerequisite: SE 200, 210, SE 220*

**SE 340** **3 cr. 3 hr.**
**Characteristics of Severely Multiply Handicapped**
Offers a review of various severe handicaps and their effects on independent functioning.
*Prerequisites: SE 210, 200 (YCSN).*
*Spring semester.*

**SE 350** **3 cr. 3 hr.**
**Behavior Management in the Classroom**
Prepares students to implement a variety of behavior management techniques e.g., Time-Out, Contingency Contracting, and Applied Behavior Analysis.

**SE 355** **3 cr. 3 hr.**
**Behavior Management in the Classroom YCSN**
Specific behavior management techniques and strategies are examined with consideration given to both behavioral and psycho-dynamic strategies.

***SE 360** **3 cr. 3 hr.**
**Seminar in Special Education I and II**
Fall: Tactile and Motor Implications in Learning A study of the major theories of motor learning in exceptional children.
*Prerequisites: SE 200, 210, and SE 220.*

**SE 364** **15 cr.**
**Integrated Program for Severely Multiply Handicapped**
Course will cover assessment, program development and implementation in major curriculum areas during bi-weekly seminars. Daily practicum required.
*Prerequisites: SE 210, 340, 410 PY 110, 220.*
*Spring Semester.*

**SE 365** **9 cr.**
**Integrated Professional Program**
Moves the preparation of special educators from a college-based program to elementary schools in the community where students have theoretical, observational, and participatory experiences.

*Content includes:*
Reading/Language Arts/Learning Problems
Curriculum and Methodology
(a) Math
(b) Science
(c) Social Studies

*Eligibility: Students must have a 2.5 cumulative average in Special Education and prerequisite courses.*

***SE 366** **6 cr.**
**Practicum Level I**
Student spends 6 weeks at the same elementary school as above in an elementary teaching experience on a full-day basis. SE 365 and SE 366 are taken during the same semester.

**SE 370** **3 cr. 3 hr.**
**Eye and Vision**
Provides the special educator with knowledge concerning anatomy and physiology of the eye, visual development, refraction and interpretation of eye reports, eye disorders ranging from mild to total vision loss, and educational implications.
*Prerequisites: SE 220. Fall semester.*

**SE 380** **3 cr. 3 hr.**
**Secondary Programs for Adolescents (14-22) with Special Needs**
Student will attend lectures, complete readings, and participate in discussions related to academic programming for adolescents between the ages of 14 to 22 in a variety of educational settings.
*Prerequisites: SE 210, 220. Fall semester.*

**SE 384/385** **6 cr. each**
**Practicum I/II-Teacher of Children with Severe Special Needs**
Students participate in an sixteen-week full day practicum in a classroom for individuals with severe special needs.
*Prerequisite: Integrated Program for Severely and Multiply Handicapped. Fall semester.*

**SE 386** **6 cr.**
**Practicum Level II**
Student assumes complete classroom responsibility guided by the cooperating practitioner and the college supervisor. Students receive certification as elementary teachers (1-6).

**SE 387** **6 cr.**
**Practicum Level III**
Student assumes complete responsibility guided by the cooperating practitioner and the college supervisor. Students receive certification as Teachers of Children with Moderate Special Needs (N-9) (5-12). Students seeking certification (5-12) must be assigned to a secondary level resource room and must have completed SE 380 and PY 223 prior to Practicum Level III.

**SE 388** **6 cr.**
**Practicum (YCSN)**
Students gradually assume full responsibilty as head teacher for the operation of the classroom to which they are assigned. Students receive certification as Teacher of Young Children with Special Needs (3-7).

**SE 390** **3 cr. 3 hr.**
**Language Development and Speech (Moderate Special Needs)**
Addresses the normal development of speech, language and hearing and disorders associated with communication. Emphasis placed on the langauge/learning disabled child in the regular classroom. Weekly practicum required.
*Prerequisites: PY 221, SE 220. Fall semester.*

**SE 395** **3 cr. 3 hr.**
**Language Development and Speech YCSN**
Addresses the normal development of auditory, receptive and expressive langauge from birth to 7 years and developmental disorders. Pre speech behaviors, assessment, and teaching strategies included. Weekly practicum required.
Field based experience required.
*Prerequisite: SE 200, ED 100 and ED 211. YCSN majors, others by consent of Instructor. Fall semester.*

**SE 400** **3 cr. 3 hr.**
**Program Development for Children with Learning Problems**
Assessment and program planning for children with learning problems in language, academic and perceptual motor areas. Emphasis on children with special needs who are mainstreamed and in resource rooms. Weekly practicum required.
*Prerequisite: The Integrated Professional Program (SE 365, 366). Field based experience required.*

**SE 405** **3 cr. 3 hr.**
**Issues in Mainstreaming**
Issues will be applied to the public school system as they relate to the special needs child. Elem. majors only.

**SE 410** **3 cr. 3 hr.**
**Teaching Strategies for the Severely Handicapped**
Assessment, planning and program development are reviewed. A weekly practicum is required.
*Prerequisites: SE 210, 200, (YSCN). Fall semester.*

**SE 420** **3 cr. 3 hr.**
**Strategies for Teaching the Visually Impaired**
Covers the foundations of education for the blind and visually impaired.
*Prerequisites: SE 210, SE 370, SE 471, SE 472, Fall Semester.*

**SE 421** **3 cr. 3 hr.**
**Curriculum Development and Adaptation for the Visually Impaired**
Curriculum adaptations and specific curriculum areas will be covered and various assessment procedures and environmemental management and control will be covered.
*Prerequisites: SE 210, SE 370, SE 471, Spring Semester.*

**SE 430** **3 cr. 3 hr.**
**Children and Adolescents in Conflict**
Examined are existing models of childhood and youth disturbance as they apply to educational programming for students in conflict.

**SE 460** **3 cr. 3 hr.**
**Problems in Language Arts for Special Education**
Students identify, develop, use resources related to classroom problems in language areas.

**SE 468** **3 cr. 3 hr.**
**Group Processes and Counseling**
Designed for special education majors and provides an overview of the counseling process with handicapped students and adults, including introduction to group processes applied to various disabilities.
*Prerequisite: SE 210, 220, or consent of instructor.*

***SE 469** **3 cr. 3 hr.**
**Community Resources for the Exceptional Child**
Identification of agencies, practices and personnel, development of models, simulation of roles and production of a guide.

***SE 470** **3 cr. 3 hr.**
**Contemporary Issues in Multicultural/Bilingual Education**
Focus is on the values, life styles and customs of culturally diverse and linguistically different children.
*Prerequisites: SE 210. Spring semester.*

**SE 471** **3 cr. 3 hr.**
**Reading and Writing Braille and Mathematics**
Student will develop skill in reading Standard Literary Braille, as well as the teaching of Braille from reading readiness to adult level. Fall Semester.
*Prerequisite: SE210. This course is open to a limited number of students.*

**SE 473** **3 cr. 3 hr.**
**Methods for Teaching Multicultural/Bilingual Students**
Covers various teaching models,

identification and analysis of learning styles, skills and needs of bilingual multicultural students.
*Prerequisites: SE 210, 220, 252. Fall semester.*

**SE 490** **3 cr.**
**Independent Study**
Review, development, and synthesizing of a problem in special education. Open to juniors and seniors with permission of Instructor.

**SE 493** **3 cr. 3 hr.**
**Topics in Special Education**
Provides an opportunity for students to identify, review the literature and discuss some of the critical issues affecting the field of special education. The topic is selected by the instructor.

# Speech

Assoc. Professor:
*Robert Welch*

The Theatre Minor requires a minimum of 15 semester hours, including Introduction to Theatre (SH 415), and at least 2 of the following courses:

SH 425 Stagecraft and Theatre Production;
SH 430 Mime and Movement in Theatre *or*
PE 405 Art of Dance;
SH 435 Acting *or* PE 413 Making Dances;
SH 440 Directing the Play;
and at least 1 of the following courses:

EN 300 World Drama
EN 302 Modern Drama
EN 402 Shakespeare's Drama *or*
EN 403 Shakespeare's Thought

Three hours of a theatre internship may also count toward the minor.

**SH 010** **1 cr. 1 hr.**
**Speech Improvement**
This is a remedial course. Students are assigned after diagnosis and recommendations of need for speech improvement with individual and group therapy.

**SH 100** **3 cr. 3 hr.**
**Introduction to Speech Communication**
Theory and practice of interpersonal and public communication, including communication theory, self-concept, perception, language, listening, non-verbal communication, and public speaking. *Meets General Education speech requirement.*

**SH 110** **3 cr. 3 hr.**
**Argumentation and Debate**
Projects emphasizing analysis, research, evidence, strategies, briefing, refutation, and the delivery of debates on representative questions. *Meets General Education speech requirement.*

**SH 120** **3 cr. 3 hr.**
**Business and Career Communication**
Theory and methods of communication applied to business and career problems. Emphasis on skills especially important to students planning to work for or with an organization, such as resume writing, interviewing, and group conference techniques. *Meets General Education speech requirement.*

**SH 130** **3 cr. 3 hr.**
**Effective Speaking for the Electronic Media**
Focus on a variety of speaking experiences encountered by those who plan to use electronic media in their occupation. For students who anticipate speaking roles in industry-made productions as well as those who aspire to careers as professional broadcasters. *Meets General Education speech requirement for those majoring in Communications Media.*

**SH 140** **3 cr. 3 hr.**
**Discussion and Conference Techniques**
The fundamentals of group discussion in private and public settings, emphasizing group structure, leadership, and interpersonal relationships, including extensive practice in varied group situations. *Meets General Education speech requirement.*

**SH 160** **3 cr. 3 hr.**
**Public Speaking**
The development of skills and strategies employed in the preparation and presentation of public address. *Meets General Education speech requirement.*

**SH 210** **1 cr. 1 hr.**
**Intercollegiate Debate and Forensics**
Opportunities for study and participation in debate and forensic speaking activities.

**SH 240**
**Voice and Articulation**
The elements of vocal production and presentation, with special emphasis on the study and application of phonetic theory. *Meets General Education speech requirement.*

**SH 260** **3 cr. 3 hr.**
**Persuasion**
A study of the causes of listener belief and action, with special emphasis on the

development of strategies to influence listener behavior. *Meets General Education speech requirement.*

**SH 280** **3 cr. 3 hr.**
**Rhetorical Criticism**
An exploration of approaches to the rhetorical criticism of significant speeches and speech movements, past and present.

**SH 415** **3 cr. 3 hr.**
**Introduction to Theatre**
An introductory course, surveying theatre: its history, focuses, practices, and major practitioners (directors, actors, scenic designers), emphasizing historical and social contexts.

**SH 415** **3 cr. 3 hr.**
**Introduction to Theatre**
An introductory course, surveyng theatre: its history, focuses, practices and major practitioners (directors, actors, scenic designers), emphasizing historical and social contexts.

**SH 420** **3 cr. 3 hr.**
**Children's Theatre**
An introductory course in theatre for children, its principles and practices, covering aspects of play production for juvenile audiences: script selection and evaluation, directing, acting, and staging techniques.

**SH 425** **3 cr. 3 hr.**
**Stagecraft and Theatre Production**
In a laboratory situation, the student will take one selected play from initial sketches through to the finished model and plans for production, including design, set building, costuming, lighting, and management.

**SH 430** **3 cr. 3 hr.**
**Acting**
Fundamentals of stage speech and movement, creative mime and improvisation. Plays read and analyzed. Systematic technique building and scene study heavily emphasized.

**SH 440** **3 cr. 3 hr.**
**Directing the Play**
A lecture/seminar/workshop in the basic elements of style/blocking/ organization/focus.

**SH 490** **3 cr.**
**Independent study**
For exceptional students excelling in scholarship upon approval of department head and advising instuctor. Course of study, meetings, and credit by arrangement.

**SH 493** **3 cr. 3 hr.**
**Topics in Speech**
Courses having a narrow focus or those taught on an irregular basis may be offered. New courses may be taught on an experimental basis under the title.

# *The College Directory*

# Board of Trustees

P. WARREN KEATING
Chairman. 3/1/91

BERNARD FOLEY
Vice Chairman. 3/1/89

BAYLA G. CORNELL
Secretary. 3/1/89

LILLIAN N. BRODERICK
3/1/92

HERBERT E. DUNNINGTON
3/1/91

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3/1/90

DANA R. HARRINGTON
6/30/89

JOHN B. McLAUGHLIN
3/1/90

LEO F. McMANUS
3/1/92

RICHARD H. SAYRE
3/1/92

NANCY J. FINKELSTEIN
3/1/92

# Administration

If you have questions the following administrators have information on subject matter listed below:

*The President*
General interests of the College.

*The Vice President for Academic Affairs*
Academic services, faculty and academic professional staff.

The Undergraduate Dean
Curriculum, academic work of students.

*The Director of Facilities*
Space allocation, handicapped accessibility, all contruction, maintenance and repairs, security.

*The Registrar*
Academic records, transcripts.

*The Vice President for Student Services*
Financial Aid, scholarships, remunerative work, placement, counseling.

# Office of the President

VINCENT J. MARA
President
BSEd Worcester State College
EdM Worcester State College,
PhD University of Connecticut. 1976

DANIEL S. FLYNN
Assistant to the President, Development
AA Worcester Junior College
AB Assumption College. 1978

TERRANCE CARROLL
Assistant to the President
AB Northeastern University
MEd Fitchburg State College. 1974

JOHN J. GIARUSSO
Director, Personnel and Affirmative Action
BS Worcster State College. 1987

ELIZABETH M. RODENHISER
Staff Assistant Administrative Services
Certificate, Salter Secretarial School. 1976

RITA BERGERON
Staff Assistant, Compensation Mgr.
BS - Bus. Admin., Fitchburg State. 1970

ROY HALL, III
Director, Management Information
Systems Computer Center
BS Framingham State College. 1977

TIEW SIEW HAN
Staff Assistant, Programmer Analyst
BA University Southwestern Louisiana
MBA University of New Orleans. 1988

PATRICIA CARROLL
Staff Assistant Computer Programmer — Computer Center
BS Worcester State College. 1980

RODNEY GAUDET
Staff Assistant Computer Center
BS Fitchburg State College. 1984

JANE LEWICKE
Staff Assistant/Programmer Analyst — Computer Center
BS Lowell Technological Institute. 1984

LAURA GURLEY-MOZIE
Staff Assistant/User-Services
BS Fitchburg State College. 1981

DENISE POPKO
Alumni Director
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BA University of Massachusetts
AM University of Massachusetts
AM Harvard University
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Professor, English. 1966

PASSIOS, Irene
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MEd Fitchburg State Teachers College
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MM Temple University
PhD University of Connecticut
Associate Professor, Music. 1968

PHELPS, Edson H.
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MS Boston College
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BA University of New Hampshire
MEd Colorado State University
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MS Boston College
Assistant Professor, Nursing. 1968

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Assistant Professor
Industrial Technology. 1981

THOMAS, Edmund
BS John Carroll University
MA Kent State University
PhD Clark University
Professor, History. 1967

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BS State University of New York
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MS Adelphi University
PhD Northeastern University
Associate Professor, Biology. 1981

TOWER, Cynthia
BA Western College for Women
MSW University of Connecticut
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Associate Professor,
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BA Fitchburg State College
BS University of Massachusetts
MS Boston College
Assistant Professor, Nursing. 1983

TURK, Michael
AB Princeton University
MA Harvard University
PhD Harvard University
Assistant Professor, Economics. 1982

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BS University of Birmingham (England)
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EdD University of Massachusetts
Professor,
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WAGNER, Shirley
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WELCH, Robert
BS Emerson College
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Associate Professor, Speech. 1968

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WORFOLK, Jean B.
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BS Columbia University
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MAC DONALD, Barbara
BS Boston College
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MAC LEAN, Marianne
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MS Boston College
Part-time Instructor, Nursing. 1981

# Clinical Faculty

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MHA Clark University

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BS Fitchburg State College

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# Professors Emeriti

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TATER, Lillian
EdM Professor Emerita of English

THOMAS, Rene
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Industrial Technology

# *Academic Glossary*

*Baccalaureate* The Bachelor's Degree; traditional first step on the ladder of higher education. It is characterized by a four-year program which blends courses aimed at promoting the acquisition of broad knowledge through General Education (historically, the liberal education) with courses designed to give depth of understanding in the major field.

*Carnegie Unit* The unit of work expected of students for each college credit. The College expects students to spend 45 hours of work for each credit. The most common break down for one credit is one hour of class work and two hours of homework for fifteen weeks each semester. A three-credit course demands nine hours of work each week.

*CLEP* The College Level Examination Program by which up to 60 semester hours of credit may be earned towards the degree. For details, see, "Alternative Programs."

*College Style Manual Standard* The Modern Language Association Style Manual is the official standard for the College. Except wherein a Program or Department has specifically designated some other standard as more relevent to its Field, composition shall adhere to the official standard.

*Credits* Arithmetic representation of the value of completed course work towards the degree requirements. One classroom hour and two hours of homework for the nominal fifteen-week semester usually counts for one credit. As the usual course responsibility requires three classroom hours per week, per semester, and six hours of work per week outside the classroom, the normal yield per course is three credits. Tradition and practice in the case of laboratory, studio, shop and other practica awards proportional credit for hours of attendance.

*Department* An administrative subdivision of the faculty. Sometimes the department is identical with a discipline category such as English or Mathematics. Departments such as Behavioral Sciences, Humanities, and Social Sciences represent an association of faculty members of related disciplines.

*Electives* Those course selections by the candidate which are not predetermined by graduation, Major or Minor requirements.

*General Education* Befitting the Baccalaureate tradition and current practice, the Fitchburg State College candidate is required to complete a minimum of 60 credits in a distribution of courses involving the sweep of liberal arts disciplines at the College. For details, see, "General Education."

*Major* That structured experience in an academic field which constitutes the candidates's specialization. All degree programs require a Major; there are three options open. As considerable variation exists as to prerequisites and total credits, the candidate must carefully study the structure of the Major of her/his choice. For details of Major requirements, see, "Courses and Programs..."

*Minor* That structured experience in a related Discipline/Field which is recognized by the Major Department as supportive of the candidate's specialization. Minors are defined by the Academic Department offering them. As considerable variation in requirements exist, the candidate should study carefully the Minor offerings, see, "Courses and Programs..."

*Prerequisite* Those courses which must be satisfactorily completed before admission to certain other courses. Prerequisite courses are listed in the course description of the course requiring them. Again, see, "Courses and Programs...'

*Program* That construct of General Education, Major, Minor, and/or professional courses which satisfies the requirements for a particular degree.

*Self-Help* Self-Help is in the form of loans and work.

*Style Manual* The Modern Language Style Manual for writing is the official style manual for Fitchburg State College unless modified by individual departments for needs particular to their discipline.

*Track* That subdivision of academic programs which constitutes a unit of professional competence. Suggestive of the complexity of identifications involved in only one Department, consider the example of Business Administration. This program includes tracks in Accounting, Management, and Marketing. The candidate should clarify with his/her advisor and Major Department the track which he/she is interested in pursuing.

*Waiver of Regulations* Recognizing the inappropriateness of rigidity in endeavors to promote its goals, the College provides for waiver procedure relative to its baccalaureate

rules, regulations and programs. All petitions for waiver of regulations begin with the Office of the Undergraduate Dean. The student should note that reasons for waiver must be as exceptional as the grant.

# Parking Regulations

Parking facilities at Fitchburg State College are limited, but have been gradually expanded to over 1,100 cars.

All vehicles utilizing the parking facilities at Fitchburg State College must display the proper identification sticker. Stickers may be purchased at the Campus Security office located in the Power Plant Building.

Students residing in campus-owned residence halls are not permitted to bring a motor vehicle to campus unless their academic program requires the use of such.

More specific information can be found in the booklet entitled "Motor Vehicle Regulations."

# Animals on Campus

Due to health and safety considerations, no animals can be allowed on campus or in campus buildings at any time. Only exceptions are seeing-eye dogs and laboratory animals.

# Massachusetts Trespass Act

Fitchburg State College is governed by the Massachusetts Trespass Act, enacted June 2, 1969.

## *Trespassing Upon the Land of Certain Institutions*

Whoever willfully trespasses upon land or premises belonging to the Commonwealth, or to any authority established by the general court for purposes incidental to higher education after notice from an officer of any of said institutions to leave said land, remains thereon, shall be punished by a fine of not more than $50 or by imprisonment for not more than three months.

# Buildings and Grounds

The 90-acre campus includes academic buildings, an administration complex, three residence halls, an apartment residence complex, the library campus center, an auditorium theater, a dining commons, and gymnasium. A short distance north of the campus is a 36-acre athletic and recreational area and the McKay Campus School, a cooperative laboratory facility involving college education students and elementary children. The College also owns a 120-acre conservation area located in three neighboring communities.

# Maps

1 Aubuchon Hall
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2 Russell Towers
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3 Herlihy Hall
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4 Town House Apartments
5 Conlon Building
A Fine Arts
B Industrial Technology
Communications/Media
6 Weston Auditorium
7 Condike Science Building
8 Sanders Administration Building
Admissions Office
Graduate and Continuing Education Office
9 Parkinson Gymnasium
10 Willis B Anthony Building
Receiving
11 Power Plant
Campus Police
12 Percival Hall
13 Edgerly Hall
14 Thompson Hall
15 Miller Hall
16 Hammond Building
Library/Campus Center
17 Holmes Dining Commons
18 McKay Campus Building
19 Athletic Fields
20 Newman Center
ROSS STREET
PEARL STREET
CEDAR STREET
Fitchburg
STATE COLLEGE
Fitchburg, MA 01420-2697 617/345-2151

COLLEGE FIELDS
McKAY SCHOOL
JOHN FITCH HIGHWAY
N
FITCHBURG, MA
2A
MAIN ST
BUS & TRAIN STATION
TO KEENE N.H.
TO WORCESTER
12

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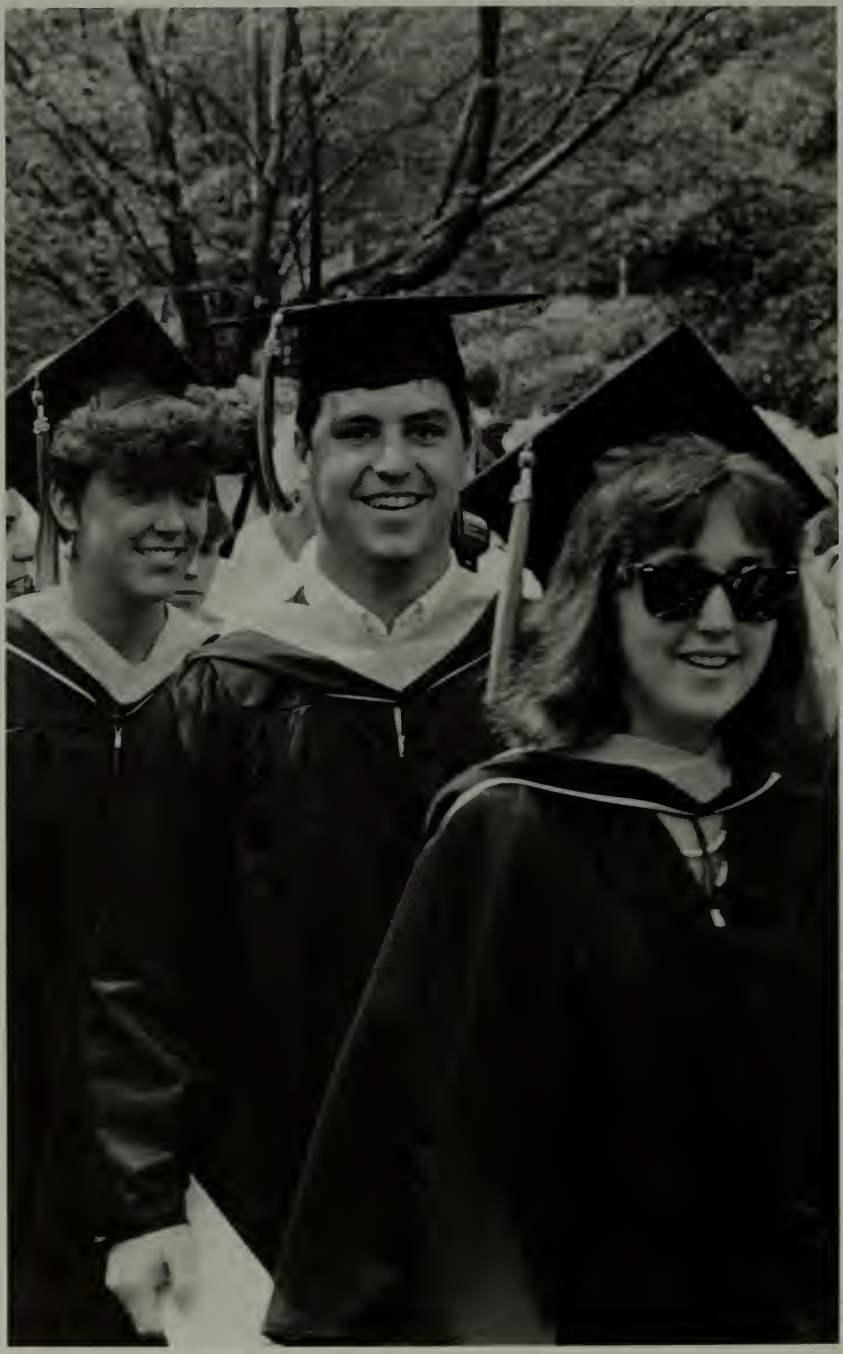

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